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ORCHARD and FARM

JANUARY, 1922

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Sun-Maid Raisin Bread

Next time you bake bread make a loaf like this with Sun-Maid Raisins, and try it on your man folks.

Raisin Bread

3 cups flour, 4 teaspoons baking powder, 1 teaspoon salt, ¾ cup sugar, 1 cup Sun-Maid seeded raisins cut in pieces, 1 egg, 1 cup milk.

Soak raisins in boiling water for 15 minutes. Drain and dry. Sift flour, baking powder, salt and sugar together. Add raisins. Mix beaten egg with milk and add to flour, stirring constantly. Pour into greased bread pans. Let stand for 10 minutes and bake in moderate oven for 40 to 45 minutes.

This makes two small loaves or one large loaf.

All measurements for this recipe are level.

Red package (Seedless), best for stewing.

HERE'S a luscious dish to help you to keep well when there's less work and more leisure on the farm, and the old foe "inactivity" causes trouble.

Exercise is the best way, but *delicious* raisins stewed and served with cream, is also a *natural method* of keeping the body in good trim. You'll want them every morning as your regular breakfast dish, for their luscious flavor alone.

It's the raisin's practically predigested *sugar* and the *bulk* and roughage of the skins that make it an effective food. So this isn't any *notion* about raisins. Great sanitariums serve stewed raisins because they know these facts.

Merely try the raisins for a week or two, and you can prove them for yourself.

Food-Iron, Too

Remember, too, that raisins are rich in food-iron, which the blood needs to maintain vitality and strength. So in eating luscious raisins, which you like, you eat one of the greatest *health* foods known

SUN-MAID RAISINS

Always ask for Sun-Maid Raisins, made from California's finest table grapes, yet costing no more than ordinary raisins. Seeded, blue package (seeds removed) best for pie and bread; Seedless, red package (grown without seeds) best for stewing; Clusters (on the stem), a luscious, quick dessert.

Raisins are 30% cheaper than formerly. See that you get plenty in your foods.

Free Book

Send the coupon and we'll mail you more than 100 tested recipes for raisin foods in a valuable free book. Send for it now.

California Associated Raisin Co.

Membership, 13,000 Growers

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Please send me copy of your free book, "Sun-Maid Recipes".

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OUR EDITORIAL POLICY

ORCHARD and FARM is a magazine of, by and for agricultural people. We believe that to the tiller of the soil is due the best that life affords. We believe that he is the bulwark of the Nation. We honor him as the basic producer. His problems are our problems; his triumphs our triumphs; his joys and sorrows, ours. To record his achievements and expose the duplicity of his enemies; to fight for and with him; to give him genuine help and practical information; to assist, entertain and inspire every member of his happy household—that is the policy of ORCHARD and FARM.

ORCHARD and FARM

ESTABLISHED 1889

Published Monthly by Country Life Publishing Company
1111 South Broadway, Los Angeles, California
"THE SILENT PARTNER OF THE SUCCESSFUL FARMER"

YOUR QUESTIONS ANSWERED

ORCHARD and FARM is an institution of service. Subscribers may receive, free of charge, answers to questions upon any agricultural subject. Through its large staff of specialists, and its close contact with authentic sources of information, this magazine is able and willing to serve any subscriber who requires aid or information. Be sure to write name plainly and to give complete address, including street, R. F. D., or box number.

VOL. XXXIV Entered July 16, 1917, as second class matter at the Post Office of Los Angeles, California, under act of Congress of March 3rd, 1879. Subscription price $1 a year. NO. 1

Pithy Paragraphs

This is the season when Americans make new resolutions and Europeans make new revolutions.

Our sympathies go out to the unsuccessful cabbage grower who couldn't get a-head.

Uncle Wiseacre insists the modern girl is not as bad as she is painted.

The subject of prohibition has inspired many a dry sermon.

A "hard" rain consists of soft water. Is our language meaningless?

The fellow who insists he is always right is very likely to get left.

As great oaks grow from little acorns, so a chip on the shoulder may become a stumbling block to progress.

Have you taken an inventory of resources, liabilities, animals and equipment? Most business concerns take inventory the first of the year, and many progressive farmers have adopted the custom. A complete survey of the ranch at this season is helpful in many ways; it affords a sound basis on which to open or close a set of books, provides means of detecting losses, and serves to acquaint the farmer with his own business.

Orchard and Farm wishes every one of its readers a most happy and prosperous new year.

Jas. O. Knollin

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No Longer a Pillar of the Church!

"No, ah ain't goin' to church no more sah," said Rastus, in reply to a question from his employer.

"What, not going to church! Why I thought you never missed a Sunday."

"Well, sah, I ain't bin since dey done take mah job away f'm me."

"Your job?"

"Yassah, ah used t' pass de collection box, but dey gib dat job to a sojer veteran."

"Oh, I see. In recognition of his heroic service overseas, I presume."

"No, ah reckon it's on account ob his havin' only one ahm!"

SAFETY FIRST is a good slogan for every occasion. It applies particularly to the purchase of goods on the present market. One way to "play safe" is to make a practice of reading advertisements, for consistent advertising is the best indication of stability on the part of any manufacturer or dealer. Then, too, advertisements are educational. In the list below are included a number of important innovations and new inventions and ideas of intense interest to farmers and their families. Make regular use of this convenient, alphabetically-arranged questionnaire. "You haven't read the magazine until you've read the ads."

Alphabetically Arranged List of Advertisements

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Wrist Watch—How can I secure one free?.......... 9

Between Ourselves

The "System Contest," ending January first, brought out a great amount of valuable and interesting information. Watch for announcement of winners in February number.

Subscribers are urgently requested to mention ORCHARD and FARM in sending for the many free books, catalogs and bulletins offered by advertisers, in ordering from the advertising columns, or in making inquiry about any advertised article. Simply say, "I saw your ad in ORCHARD and FARM." This identifies you immediately, facilitates checking in case of any misunderstanding, and is more satisfactory to the advertiser, the publisher, and the reader.

Never before has ORCHARD and FARM been able to arrange such attractive clubbing offers as we are making now. Even though examination of the address label on your copy shows an expiration date several months ahead, you should take advantage of these remarkable opportunities. Renewed subscriptions are extended from date of expiration. Send in your order now. Each of the magazines may be sent to a different address if you desire. Note announcement on page 29.

Are poultrymen born—not made? If so, W. H. Young waited a good many years to fulfill his destiny, for this wonderfully successful producer was in business in a middle-western city five years ago. Read his inspiring story on page 6 of this number.

Not turkeys; not hens! Are they ostriches? Note the illustration of a strange new fowl, produced by a California experimenter—page 22 of this number. By the way, have you ever noticed how frequently you get the first news about new crops, new methods, new innovations, in ORCHARD and FARM? For example, there is the article on chlorine gas for ground squirrel extermination on page 5. ORCHARD and FARM looks ahead—but scrutinizes closely!

"See For Yourself!"

We are constantly reminding readers of the value of the "Farmers' Classified Market Place," pages 30 and 31. Don't take our word for it. Turn to this part of the magazine now and "see for yourself." Once you get the habit, you will never let a month pass without consulting this interesting directory. And when you have anything to sell, you may announce your proposition where some 50,000 other subscribers and their families will read your message, in the "Market Place," pages 30 and 31. Read them now!

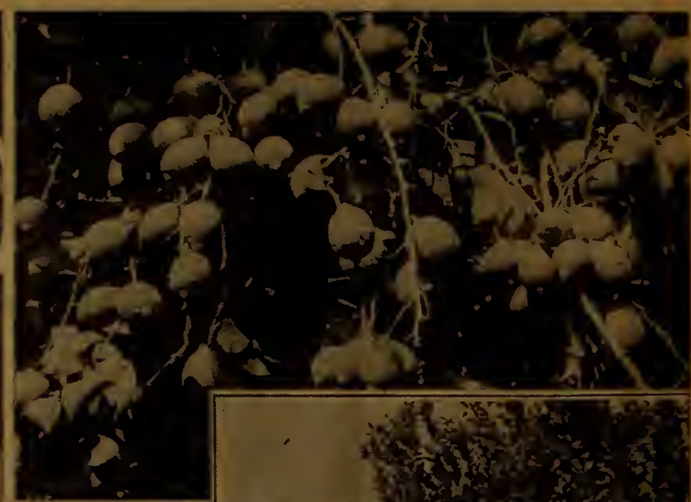
THE "GREEN" HAND

The Boss—"Hey, what's the idea of moving the machinery oll around?"

His Nibs—"W-wh-why, didn't you tell me to go and turn the separator?"

One good turn deserves another, and no doubt John will turn out all right eventually, but his case certainly appears hopeless. Perhaps, the first of the year, he will turn over a new leaf—which, by the way, is a good idea for every one. Turn the pages of ORCHARD and FARM and observe how many helpful ideas are presented. Why not do your friends a good turn by subscribing for them? Or just send us their names and we will mail sample copies.

HELPFUL HINTS PICTORIALLY PRESENTED



Eight hundred pounds!—Is the weight of the 10 watermelons at the left, grown by P. M. Rasmussen, of Fresno, from Germain seed. The largest melon, 47 inches long, weighed 117 pounds and took first prize at the State Fair. "Giant Wonder" variety.

The Poets Rave!—About the "woodey brook," (upper left) which is nothing more or less than an old dry wash, along which cottonwood posts were set to confine the water to its channel. These posts (shown in the lower view) sprouted and grew with gratifying results!—Victor W. Killick.

How Many Pies would the lemons make? This grower allows his trees to "bush out" without pruning so that the fruit is matured in the shade, protected from sun and wind. In a space of 5 square feet, 109 fancy grade lemons were found. The upper view is a "close-up" of the same fruit.—Killick Photo.

The Farmerette is pointing triumphantly to a successful arch-graft, by which a lemon tree was saved. Sucker sprouts were encouraged to grow from the roots. After they have grown strong enough to support the tree, the damaged portion of the trunk may be cut away.

A White Leghorn is not the only hen that can make egg records. This "dual-purpose" Orpington biddy laid 340 eggs in one year. Many general farmers prefer the meat-and-egg breeds.

Too Much of a Good Thing!—The zealous owner of this Lisbon lemon, by over-fertilization, succeeded in making it produce 4700 pounds of fruit. But the weight was too much for the tree to carry, with disastrous results. Sometimes the enthusiastic producer allows his desire for quick profit to overbalance his good judgment.—V. W. K.

And the Other Extreme is illustrated above. The smaller twig and leaf were taken from a half-starved tree and are shown in contrast with the large leaf and well-formed fruit of a tree that was fertilized properly.—V. W. K.

The Long and Short of It—Here are two twigs from Valencia orange trees of the same age growing in adjoining plots. The large twig with fruit set, shows the value of proper "feeding." The undernourished tree, which bore the smaller twig did not make much profit for its owner.—V. W. K.

ORCHARD and FARM

VOL. XXXIV JANUARY, 1922 NO. 1

DEADLY CHLORINE GAS EFFECTIVE IN RELENTLESS WARFARE ON GROUND SQUIRRELS

Here's One Way in Which the World War Benefited the Farmers!

WE HEAR much of the evil effects of warfare and seldom do we find anything about it to be thankful for. But the poison gas developed in the titanic struggle has suggested what promises to be the most effective method ever devised for ridding the country of the ground squirrel pest. In this article are described recent experiments in California with ordinary chlorine, which resulted in almost complete annihilation of squirrels upon a badly-infested area, at a very moderate cost.—Editor.

By Charles Coil

ILLUSTRATED BY GEORGE GRANT

THE use of chlorine for the destruction of ground squirrels began in 1919, and has been developing slowly until it has reached the stage where it must have serious consideration. The first work was done near Antioch by the Great Western Electro-Chem Co., of Pittsburg, Cal. While no records were kept of these experiments, the benefits were so evident that the chemical concern devoted considerable time and expense to research work.

The object of the first work was singly to kill squirrels. Little attention was given the amount of chlorine used or wasted. The squirrels were so obviously and thoroughly disposed of, that efforts were made to put the process on a commercial basis.

ORIGINAL METHOD IMPROVED

The original procedure was to force into the burrow a measured amount of chlorine, calculated to be in excess of the amount required. This was not satisfactory for several reasons. It is difficult to get a simple, inexpensive, measuring device, strong enough to stand rough work in the field, that can be used with chlorine.

This objection could have been overcome, but it soon developed that while this method gave good results, it did not give the high efficiency desired because of the great variation in size of the burrows. With some burrows gas was wasted; with others of the colony type, the squirrel escaped by moving into another burrow. This is what is to be expected, as it is an exact parallel to the carbon bisulphide method, where a measured amount of gas is put into a hole; it may, or may not, be sufficient to do the work.

These facts led to the development of the present method, which was adopted in the spring of 1921. It consists of letting the gas flow from the cylinder, under its own pressure, until it shows at the mouth of the hole. This means that the burrow is filled with chlorine gas at a 10 to 20 per cent concentration.

This is a higher concentration than is necessary to kill, (2 per cent has been proven to be ample). A squirrel cannot remain in this concentration of gas and live. And if the squirrel comes out, as it sometimes does, it dies within a short time.

A NUMBER OF AREAS WERE TREATED IN THIS WAY AND THE RESULTS SEEM TO WARRANT THE STATEMENT THAT ONE TREATMENT WILL GIVE PRACTICALLY COMPLETE EXTERMINATION AT A VERY REASONABLE COST.

The outfit used for the experimental work consisted of a Ford truck or touring car for fairly level land or a sled or cart with a horse for steep slopes to carry the cylinder of chlorine. A 25-foot length of flexible steel tubing was attached to the cylinder. The crew consisted of three men—one to drive and one with a hose and one with a shovel. The cylinder was driven to the point where the most holes could be reached and the end of the tube inserted in the burrow. The valve was opened until the gas could be seen rising slowly in the hole. The hole then was closed with a shovel full of dirt and the gas allowed to flow for a few seconds to force it over any obstructions in the burrow. The gas then was shut off and the tube withdrawn.

REPORT OF RANCH WORK

On the Hanlon ranch, one mile east of Pittsburg, Cal., in January, 1921, some 530 holes were treated one afternoon with a chlorine consumption of 65 pounds. The Santa Fe right-of-way which adjoins this field on the south and is a part of the same squirrel colony, was not treated.

Examination after three days showed 25 holes open. While it is impossible to say positively, some of these and probably all, had been opened from the outside by other squirrels. In April, 44 holes were found open in this field and were treated with chlorine. After three days, the holes all were found to be closed.

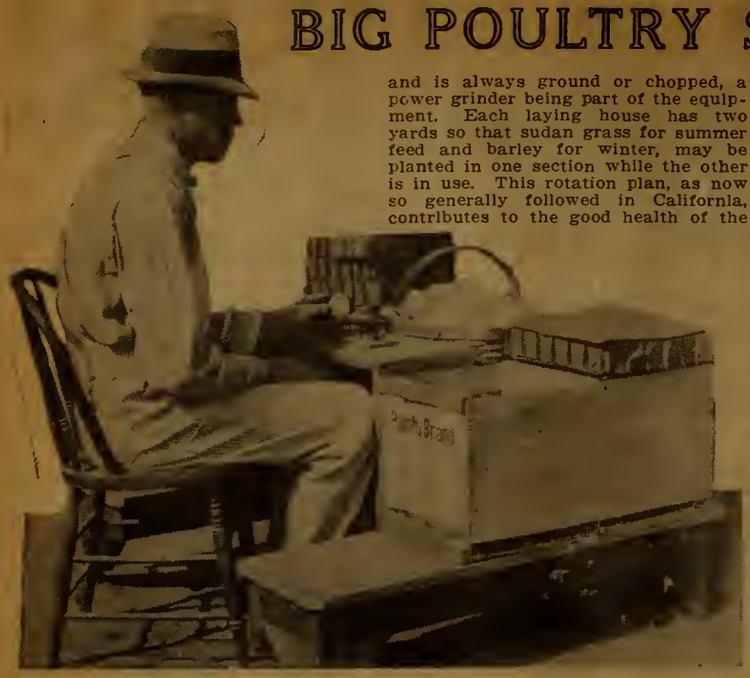
Other work was done on a smaller scale near Pittsburg, with similar results, and on July 1st, 1921, a demonstration was conducted in the presence of W. C. Jacobsen, State Superintendent of Rodent Control; F. E. Garlough, U. S. Biological Survey and V. E. Stephens, Horticultural Commissioner of Contra Costa County. The results were so satisfactory that it has been decided to go ahead with this work.

The gas has a very toxic effect on the squirrels; they always die within a short time. It is not dangerous or difficult to handle. It is disagreeable, of course, if not properly controlled, but unskilled labor learns to use it in a short time. It is non-inflammable; in fact, will not burn under any circumstances. The gas can be shipped by freight or express anywhere and does not damage growing crops. If it comes in contact with growing grains, or other green stuff it will bleach them white, temporarily, but does not retard the growth, and the green color soon returns. The outfit is simple and inexpensive. The gas is supplied in liquid form, in steel cylinders containing 100 or 150 pounds. The chlorine is sold

(Continued on (Page 34)

BIG POULTRY SUCCESS ON TWO ACRES

Written by The Editor



Egg Sorting Table

Here is W. H. Young, the subject of this sketch, sorting eggs at a table of unique style, constructed after his own design. The table is illustrated and described in detail elsewhere in this article. Mr. Young is using egg-scales for grading the eggs by weight.

"I WENT into the poultry business with plenty of capital.

"I read every available book, bulletin, article and report—and made a thorough study of my subject, before taking the plunge.

"I followed the advice of those who had learned how to feed.

"I studied the most successful poultry plants before establishing my own, for I had been engaged in the mercantile business and knew practically nothing of commercial poultry-keeping when I came to California to live."

Thus, briefly, does W. H. Young summarize the reasons for his remarkable record.

This young producer is said to realize a larger annual profit per hen, on his two-acre "ranch" than any other commercial poultryman in Southern California. Exact figures are not available for comparison, but let the reader draw his own conclusions.

An average of 2100 hens and pullets, maintained during the past year, have returned nearly $10,000 in egg money alone, the receipts varying from about $600 to more than $1100 per month.

Sales of fat cockerels have helped to pay the total feed bill, while a hatchery, which turned out 30,000 day-old chicks last season, is an additional and very profitable department. All the chicks were delivered this year within a radius of 50 miles.

Another source of considerable income is in the sale of breeding stock and this is increasing in importance, as the virility and high-productiveness of Young's White Leghorns become known.

ALMOST DISEASE-FREE

For, indeed, there are few intensive poultry farms that can demonstrate as low a percentage of disease and death and as high a percentage of egg-production and "hatchability" as Young's.

Absolute cleanliness may have a great deal to do with it. Then, Mr. Young has a "hospital coop," where occasional "patients" are isolated immediately. But the axe is the best medicine for severe cases, he maintains.

Pure water is pumped from an 80-foot well and is piped to automatic fountains in all pens. These founts are cleaned every day and disinfected frequently.

As a precaution against mites, lice and disease, all buildings when first constructed were painted inside with carbolineum. The roosts are treated with this material three or four times a year.

The laying houses are cleaned daily, and nesting material never is allowed to become dirty.

Hoppers in the yards are kept filled with grit and shell. All laying stock receives lacteln and water in the proportion of 1 to 19, fed in crocks, three times a week the year around. (Chicks get semi-solid buttermilk three times a week, and this gradually is changed to lacteln.)

Green feed is provided regularly and is always ground or chopped, a power grinder being part of the equipment. Each laying house has two yards so that sudan grass for summer feed and barley for winter, may be planted in one section while the other is in use. This rotation plan, as now so generally followed in California, contributes to the good health of the flock as well as reducing feed bills, Mr. Young believes. For at regular periods, it makes available clean "range," the ground being spaded up, and freshened by the growing crop, which in turn is stimulated by the added fertility.

Secrets of Success at First Hand

WITH gross returns from market eggs alone averaging more than $750 a month for the past year, this poultryman has made a remarkable record on his two-acre ranch, near Downey. His up-to-date methods are described briefly in this article.

The Young "ranch" is ideally equipped, the investment for land, buildings, accessories, pump, machinery and residence totaling nearly $15,000.

The brooder house, 16x112 feet, with a capacity of 5000 chicks, cost $2500. It is warmed by a hot-water system which is operated with gas, and controlled by a heat regulator. Ventilation is provided by means of windows and roof vents, all controlled from the cement alley with ropes and pulleys. The doors leading into the yards also may be raised and lowered with cords from the alley. The yards are shaded with "weeping mulberry" trees, planted on the line between enclosures, and trained over the woven-wire.

The incubator house, with equipment, represents an investment of $2500. It has a capacity of 11,000 eggs. The ventilating system includes floor registers and roof vents, and the building is sealed with battened wallboard.

The four laying houses, costing nearly $3000, have a capacity of 2300. They are 20x50 feet in size, with drop boards 7x45 feet. The roosts consist of six rows of 2x3's, placed edgewise and loose, so that they may be lifted out. The drop boards are flat and are cleaned every morning by scraping with a hoe. They are kept sanded.

At the center and front of each house is an extension containing the "broody coop" above and water founts below. The nests are arranged along the back, all operations being conducted from the one alley. The laying houses have cement floors.

A section of one of these houses is provided with trap-nests, in which 100 pullets are being tested. These have been laying 50 to 54 per cent at nine months of age. It is Mr. Young's plan to install trap-nests throughout the plant within a year.

ARTIFICIAL DAYLIGHT

Electric lights are used in the laying houses. The pullets have been working "overtime" since October 10th. The ninth or tenth day after the lights are turned on, a big increase in egg production always is noticeable, this progressive poultryman states.

At four o'clock each morning all the lights are switched on by an automatic time clock. They are not used at night.

Some of the scratch mixture fed at night is left in the litter, and a few moments after the artificial daylight pervades the buildings, all the hens are

(Continued on Page 20)

A Prize Pen and a Vigilant Guardian

These upstanding birds are representative of the vigor and good form of the Young stock. "Loup," a 100-pound police dog, is chained up by day, but at night he patrols the alleys and fence-lines, boding ill to the prowling, purloining "hobo."

PRACTICAL POINTERS
IN FEW WORDS
FOR BUSY FARMERS

More About Hubam Clover—A local experiment with Hubam, the new annual, white blossom sweet clover, is reported by the Bomberger Seed Co., of Modesto and Fresno. Near Greenfield, Monterey County, a small trial packet of seed was planted by John Hoffer, who states that he harvested nearly 55 pounds of seed and that the plants made a remarkable growth. Carrying on experiments on a larger scale, the seed company reports the harvesting of more than 6000 pounds from six acres. Pictures of this field were sent back to Iowa (the center of Hubam production). The Middle Western growers, while acknowledging the superior growth of the plants, challenged California to equal their production of 500 pounds of seed per acre! No doubt the California record of 1000 pounds will make the Easterners "sit up and take notice."

The present price of the seed is from $1 to $3 a pound, and a large quantity has been sold in the East at $5 a pound. But even when heavy production forces down prices, California may realize upon her natural advantages by producing big yields of superior Hubam seed. Experimental plats are being grown in many different sections of the State. According to the A. I. Root Company, recognized authorities on honey-production, Hubam will prove one of the greatest bee-pasture plants ever discovered. This legume is hailed, also, as a remarkable soil renewer.

Why Some "Small" Farmers Fail—"Just why it is that some farmers grow crops which net only $10 to $50 an acre and then complain they can't make a living on a small farm is beyond comprehension," remarked an economic investigator recently. "Corn, wheat and hay should not be expected to produce a living upon a small acreage." Small tracts of high priced land call for intensive methods of production. Truck crops, Poultry, fruit and other special enterprises are essential to success upon the little farm.

Mariout Barley in Tulare County—The Scheffmann ranch of Pixley, Tulare County, tested out the new University Farm Mariout barley this season by planting 100 acres under the same conditions as common barley, and, according to H. G. Coffee, superintendent, Mariout yielded 18 bags per acre, averaging 108 pounds per bag. Common barley under the same conditions yielded 10 bags per acre and averaged 95 pounds per bag.

Milk of Human Kindness Still Up to Standard—In these days of rush and hurry and thoughtlessness it is good to be able to take note of an instance of good old-fashioned kindness and neighborliness such as is reported from a Minnesota community.

A serious accident which befell a farmer, confining him to the hospital for two months, left all his fall work undone. Utterly discouraged, he was astonished one morning at the approach of an army of neighbors, men and women, who took possession of the farm. A parade of men with teams clattered into the corn field. Twelve men, the carpenters of the bunch, set about repairing the buildings. Before the end of the day all the corn had been husked and stored in the newly repaired cribs.

Seven tractors were turned loose in the stubble under the guidance of competent operators, and in a few hours the farmer's worry about his fall plowing was all over.

The feminine contingent cleaned the house from attic to cellar, and from the supply of food brought with them prepared the dinner for the hungry horde of workmen.—George E. Fuller.

Track Wheel for Round Wheelers—Owners of small, round-wheel tractors are displaying great interest in the latest invention of A. C. Johnson, widely known California designer. This is a track that takes the place of the regular wheels, adding about 800 pounds to the weight of the machine and giving a bearing surface of 600 inches. An unofficial test of the device conducted on the University Farm at Davis recently is said to have shown a considerable increase in drawbar pull on plowed ground. Provision has been made for the attachment of fenders to protect the hanging limbs of trees and also to protect the operator from dust. It is said that two men can change from the round to the track wheels in 15 to 20 minutes. ORCHARD and FARM is indebted to the Schmeiser Manufacturing Company of Davis for the description of this interesting device.

Does It Pay to Use Tractors?—Prof. L. J. Fletcher of the University of California comments very effectively on the profitable use of tractors:

"Too often tractor and horse work are compared on simply the cost per acre for the doing of a certain kind of job. In many types of California agriculture the cost per acre is not the most important factor. A good way to judge the comparative efficiency of farm power is by the net returns at the end of the year. A good example of this is found in the case of a Ventura farmer. His bean land had formerly been worked by mules. After two years of experience with a large tractor he has found that his annual returns in crop yield are much greater. He says: 'I plow deeper and at the right time. I am pulling heavy chisels which I could not use at all with the animal power. The work is done better, since I do the bulk of it myself.'

"Another angle of this same question was brought to light when the writer was invited into the farm home. It was as nicely and as comfortably furnished and equipped as a city home, and there was also a story to tell here concerning the change from mules to the tractor.

"During most of the year the farmer, his wife and fourteen-year-old son made up the family. There were no hired men of uncertain habits to cook for, nor were there the early and late hours spent in taking care of the stock. During the plowing season the tractor was worked two shifts each day by the farmer and his son. More work was accomplished than formerly with three hired men and four mule outfits."

A Self-Tying Hay Baler—Hay growers will welcome a new invention which so far as the handling of hay is concerned is as interesting as the invention of the binder-knotter was to the harvest world. E. R. Koontz of Richards, Mo., has devised an apparatus to be attached to a hay baler whereby the ties are made automatically, perfectly and solidly. According to reports, it never misses. A reputable commercial firm already is manufacturing it.

With a power operated baler and with this self-tying apparatus, the labor in baling hay is reduced to a minimum and more bales can be put out in a day than formerly could be made with the use of two men to fasten the bale ties. It is another instance of power and ingenuity in increasing production and lowering costs.

The Repair Plant of the Future—It is easy enough to get an automobile into the garage, but it is not always so easy to bring the tractor round when repairs on it are necessary.

For this reason it is altogether possible that the tractor repair plant of the future will be a portable one, and indeed some such have already been built and are in use. In some respects they are similar to the portable repair outfits used by the artillery during the war.

They are equipped with a full set of metal working tools, a small forge, and some even have an electric welding outfit. The current for the welding is generated by an electric machine which derives its power from the engine which furnishes the motive power of the truck.

With a machine of this kind farmers will have at their beck and call a ready repair outfit which will handle anything in the way of repair jobs on farm machinery. Here's an idea for some enterprising California tractor expert or garage man. Who will be the first to "do it up right"?

See What This Careless Hen Did!—The San Joaquin Valley farmer who lost a $7000 barn from fire caused by a flying hen which knocked over a kerosene lantern, says he wishes now he had succumbed to the argument of a salesman who had been trying to sell him a home electric lighting plant.

"Verily it is a great and wonderful age in which we live and all should be glad that the farmer is getting an increased measure of modern comfort," says an Eastern editor, who adds, in respect to electrical equipment:

"When the farmer installs his miniature power plant he gets a double measure of blessing. With the flip of the button he gets his lights in house or barn and when he gets the belts adjusted, with another flip he can turn on the power that runs the cream separator, 'buzzes' the wood, pumps the water and grinds the feed, not to mention running the washing machine for friend wife."

Livestock Shrinkage in Transit—While many things can, and frequently do, result in excessive shrinkage in livestock, investigations have shown that at times it is at least partly due to a disposition on the part of some shippers to overfill their stock before loading. This custom seems to be a relic from the days before co-operative shipping came into vogue and when most small producers sold their stock to country buyers. Under the system of marketing wherein livestock was usually sold on the basis of home weights, or at most, shipping point weights, it was usually to the producer's advantage to obtain a generous "fill" on his stock before turning it over to the country drover.

The co-operative system of shipping livestock, however, practically eliminates the incentive to excessive home or shipping point fills. Stock that is fed heavily just before loading is not only quite likely to sicken and sometimes die while in transit, but seldom takes a good fill when it arrives at market. Furthermore, where co-operative shipments are graded at the shipping point the man whose stock has been given a heavy fill receives more than his just proportion of the net returns. Home grading of co-operative shipments is, in most instances, highly desirable, but it can be successful only where the individual members "play fair" with each other, or in other words, where they really co-operate.

Dried Apple Pomace as Dairy Feed—The general belief among dairymen that the feeding of dried apple pomace has a tendency to reduce the milk flow was not upheld in experiments recently conducted by the U. S. Department of Agriculture. The pomace was mixed with three times its weight of water several hours before feeding, producing a feed similar in water content to corn silage. No bad results were experienced over a period of 30 days. The ration consisted of grain, hay and the apple pomace. It is believed safe to feed as much soaked pomace by weight (1 part dried pomace to 3 parts water) as may be fed of wet pomace fresh from the cider press.

The Value of Planning Farm Operations—Too much emphasis cannot be laid upon the need for the modern farmer to plan his operations with the utmost care. Farming is a business. The profits derived from it are to a large measure dependent upon the care with which it is operated.

Modern operations involve systematic crop rotations. If they are to be carried out effectively, the farmer must have modern machinery.

Good crop rotations are of material benefit in distributing farm labor more evenly throughout the year, in eradicating insects and other pests, in furnishing a balanced feed for livestock, in gathering nitrogen from the air, in preventing losses of fertility, in utilizing plant food most effectively, in keeping down weeds, in regulating the humus supply of soil, in supplying both deep and shallow rooted plants and in maintaining a more regular income.

It is a good idea to have the farm carefully mapped and to have several maps prepared with the various operations in different fields carefully laid out several years ahead.

Possibilities in Blueberry Culture—Blueberries as large as Concord grapes have been produced through hydridization. Introduction of the blueberry into agriculture has more significance than the mere addition of one more agricultural industry to those already in existence. For blueberries thrive best in soils so acid as to be considered worthless for ordinary agricultural purposes. Blueberry culture, therefore, not only promises to add to the general welfare through the utilization of land almost valueless otherwise, but it offers a profitable industry to individual land owners in certain districts in which general agricultural conditions are especially hard and unpromising, and it suggests the possibility of further utilization of such lands by means of other crops adapted to acid conditions. Success in blueberry culture rests especially on the recognition of two peculiarities in the nutrition of these plants, says Frederick V. Coville in a new bulletin No. 974, Directions for Blueberry Culture, 1921, recently issued by the United States Department of Agriculture. Address Division of Publications, Washington, D. C., for free copy of this circular.

Stock Pasturing on Alfalfa—Do not pasture stock on alfalfa fields where the rains have softened the ground badly, advises the United States Department of Agriculture. To do so will render the alfalfa plants liable to be torn out by the roots or damaged very severely. Another mistake is to pasture more stock than the alfalfa will care for, resulting in close cropping and injury to the crown. It is best to limit the stock on alfalfa pasture to such an extent that the plants will grow a little faster than they are eaten.

Early Fruit Trees as Windbreaks—In the Antelope Valley pear-growing districts, orchardists are planting early apricots, peaches or crab-apples along roadsides and fence lines six or eight feet apart. Such early varieties, leafing out before the pears, are good windbreaks and do not unduly rob the soil.

The Old Orchard An Asset—As one travels through the State he may see in certain localities old orchards in decline that have not, in point of years, given full and complete service. In many cases it will be found that this condition is due largely, not to lack of knowledge or experience, but to sheer neglect! In many places a little timely care, cutting out diseased growth, consistent spraying, whitewashing, use of cement in cavities, or production of a cover crop, would have prolonged the producing powers of these same orchards, that now are doomed to serve only as firewood. A little judicious care means many added years of fruit producing and when translated into dollars and cents amounts to a very large sum.

WELDON'S PAGE---PRACTICAL HELP AND TIMELY INFORMATION

By George P. Weldon

CONTRIBUTING HORTICUTURAL EDITOR OF ORCHARD AND FARM

POMOLOGIST, CHAFFEY JUNIOR COLLEGE OF AGRICULTURE

Get After the Peach Twig Borer

THERE are cycles of good years and bad years with respect to infestation of insect pests; years when a certain species will breed to an alarming extent, and occasion heavy losses to the fruit grower, and years when the same pest scarcely will be seen.

George P. Weldon

This is not strange when we consider that insects are preyed upon by various parasite enemies, and also are checked or encouraged in their breeding by weather conditions. Parasites can become abundant only when their food supply is abundant.

Therefore when a pest, the host of a certain parasite, increases to an alarming extent, the parasite, because of the abundance of its food supply, may increase proportionately, and if conditions are very favorable for the parasite it may become so abundant that in time the pest upon which it feeds will be practically annihilated, and for a few years following, it may be of little or no economic importance.

But on the other hand, when the food supply of the parasites is diminished to a certain point, then the parasites because of a scarcity of food also must perish, and so the cycles of good and bad years come and go.

TWIG BORER ACTIVE

The past season has witnessed an unusually bad infestation of peach twig borer in the orchards of Southern California. It may be that a scarcity of parasites had something to do with it, but there were other reasons also. Because of a poor outlook in the peach market, growers in many cases, were negligent about applying the spring spray of lime-sulphur, a spray which to the peach grower is an insurance which it does not pay to neglect. In orchards unsprayed, or in which spraying was poorly done, the pest increased to an alarming extent.

In some orchards visited by the writer, it was difficult to find a peach that did not show injury from the worm which feeds within.

HOW TO RECOGNIZE

Twig borer injury assumes two forms; one form manifests itself in killing back of the tips of the twigs of young trees, thus effectively checking the terminal growth. This is not however the worst injury; that which affects the fruit later in the season far exceeds it in importance.

The tiny worm or larva of the twig borer moth eats its way beneath the skin of the peach. Sometimes the injury is little more than skin deep, while at other times the larva burrows into the kernel of the seed.

It is very common to find injury from larva which bore into the suture, as this is a favorite point of entry. All infested peaches are rendered low grade. When handled at the canneries they require hand trimming, which is expensive, and the resultant grade is not such as to command a price that will mean good returns to the grower.

At the time of pruning trees during the dormant season, the presence of the twig borer pest in hibernation may be detected. It spends the winter as a tiny larva not over ⅛ of an inch long in a cell just beneath the outer bark, in crotches of young trees.

CHOOSES EASIEST WAY

The bark in crotches chosen for hibernation, usually is soft and spongy, so that entrance may be gained without difficulty. An examination of the young tree crotches will show small patches or mounds of borings which were chewed from the hibernating cell during the work of excavation. These occur on the outside of the bark, and frequently assume the shape of a cylindrical mound. From just beneath this mound the larva may be extricated with the blade of a knife.

The location of large numbers of larva when orchards are being pruned, will furnish evidence that spraying with lime-sulphur in the spring as the buds are swelling, cannot be neglected safely.

The presence of this pest, which occurs so commonly in our orchards, furnishes one good reason why the spring treatment with lime-sulphur should be given.

Every owner of a commercial peach orchard should become familiar with the hibernating stage of this insect, so that more intelligent control work will be possible.

Alfalfa Weevil—How to Detect and Fight It

AN article in this department of ORCHARD and FARM last month emphasized the danger of the alfalfa weevil being introduced into California, and the value of the work of quarantine which is being conducted by our State Department of Agriculture.

This month it seems desirable to give more specific information regarding the character of injury and appearance of the pest, in order that its detection may be easier, should it be found by our readers in California alfalfa fields.

While everyone interested in California agriculture hopes that the arrival of this pest may be delayed for many years, no one should be so shortsighted as to consider it unimportant to keep a close watch for its appearance. The discovery of an infestation just started might make possible complete eradication, while failure to detect its presence for a year or more would probably mean that the pest would have gained a foothold that could never be broken.

Any injury to alfalfa, by some pest feeding upon it, should be treated with suspicion, and investigated carefully. The following descriptions will aid one in identifying the weevil should it be found in our State:

THE ADULT

The adult is a beetle which possesses a snout. It is classified with a large group of beetles which belong to the family CURCULIONIDAE, commonly called CURCULIOS. Other examples of similar pests may be found in the case of the plum curculio; strawberry weevil, cotton boll weevil and chestnut weevil. It is a small, oval-shaped beetle with very hard wing covers. In length it measures between ⅛ and 3-16 of an inch.

When first transforming to the adult beetle stage from the pupal stage it is brown in color, with a distinct dark hue down its back. Later the beetles change their color somewhat and become more or less mottled as a result of the presence of gray and black hairs on the body. These sometimes rub off and the insect presents a darker appearance.

It is the larval stage that the alfalfa grower will be able to find readily when an infestation occurs. The larva is a green, worm-like creature about ¼ inch long. The most characteristic marking is a white stripe running lengthwise of its back. A larva which may be mistaken for it is that of one of the syrphus flies, a beneficial group of insects which feed upon plant lice. The color and the markings of the syrphus fly larva may be almost exactly the same but the mouth parts and abdomen are very different. The alfalfa weevil larva has a strong pair of jaws with which it chews the alfalfa plant, while the syrphus fly larva has piercing mouth parts which are used in extracting the body contents of the plant lice upon which it feeds.

PUPAL STAGE

The pupa of the weevil is found in a delicate cocoon of silk, which is spun in the crown of the alfalfa plant or underneath dead leaves in the fields. It is at first pale green but later turns brown as it approaches maturity.

EGG STAGE

The eggs are laid by the female beetles during the spring in the stems of the alfalfa plant. The adult weevils make circular punctures in the stem, with their beaks, and it is in these punctures that the eggs are deposited.

The injury done by this pest is not unlike that which may result from the attack of any other chewing insect, such as the various species of caterpillars. The leaves are fed upon until they are jagged or in shreds, and where the attack is severe almost total defoliation may result.

CONTROL OF PEST

Some success has attended the use of arsenical poison sprays on fields where the weevil is present. The prospect of having to spray alfalfa fields however is one that no one relishes. Discing to form a dust mulch is practised frequently. When knocked from the alfalfa plants into the dust the weevils are killed. In order to do this a brush drag made from the branches of trees has been used to good advantage.

While control methods have enabled the alfalfa growers of infested regions to save most of their hay, the expense is considerable, and the pest remains one of the greatest menaces to the alfalfa grower that has ever appeared to prey upon his crops!

And don't forget—it is all around us! Help keep it out of California by watching carefully.—G. P. W.

Does It Pay to Fertilize? An Object Lesson in Pictures.

Lime as a "Fertilizer"

A RECENT statement by George P. Gray, of the State Department of Agriculture, calls attention to the fact that certain firms are making false claims regarding the use of lime as a fertilizer. He states, in part, as follows:

> "The attention of the State Department of Agriculture has been called frequently to false and misleading advertisements of several companies who are exploiting the sale of agricultural lime under the guise of fertilizer.
>
> "The Division of Chemistry has made many analyses of some of these so-called fertilizers and in no case has any appreciable amount of either phosphoric acid or potash been found. In one instance the company's published analysis of its product shows the following: alkalies, none; sulphuric anhydride, none; and phosphoric anhydride, five hundredths. This analysis is printed on one side of the sack, while on the other side there is printed in prominent letters, the words: "phosphoric acid," "sulphur," and "potassium," although the commercial value of five hundredths of one per cent of phosphoric acid would not be more than five or six cents, and the analysis would indicate not even a trace of either potash or sulphur. The Department of Agriculture protests against the exploitation of lime and marl under such false pretenses, and hopes that at the next session of the legislature some action will be taken to strengthen the present fertilizer law in this respect."

Orchardists of today are not easily misled, yet there are those who would purchase such lime believing that the claims made by the people who handle it are true, and that the material would have a fertilizing value if applied to the orchard. The fertilizer business has been subjected to numerous deceptions, necessitating the passage of rather strict State and National regulatory laws. In purchasing a fertilizer the farmer is entitled to know the percentage of the necessary plant food elements which it contains, and any attempt to sell a product by misrepresentation should be vigorously opposed by every interested fruit grower.

Lime has a value when applied to soils which have a deficiency. In correcting acidity and in ameliorating certain heavy types of soil there is no question about the beneficial results to be attained by its application, but it should not be expected to do the work of fertilizers that are high in those necessary plant food elements, viz.: Potash, phosphoric acid and nitrogen.

The grower may judge the true fertilizing value by study of the analysis required by law. If this does not meet the claims of the dealer, then he should pay for it only upon the basis of its value as lime or other proven quality.—G. P. W.

Pruning Himalaya Blackberries

I SHOULD like to know the best method of pruning Himalaya blackberries. Should only the new canes be left, or will the old canes do as well or better? Some berries bear only from new growth, but is it not true that the Himalaya produces just as well from the old canes as the new?—J. A. Gibson, Los Vegas, Nev.

REPLY BY GEORGE P. WELDON

The new canes of the blackberry bear the fruit and are the ones to be left when the pruning work is done in the spring. There is no exception to this rule as far as I have been able to determine. The pruning work, therefore, revolves itself into a question of leaving the desired new canes to be placed on a trellis or otherwise, and the cutting away of the old canes which have borne fruit the previous season.

Young plants frequently are summer pruned. This consists of pinching back the new growth, which will induce branching below the point of pinching back. Occasionally we find persons growing these berries without any pruning whatever but this practice is not to be recommended. Blackberries will respond to pruning the same as other fruits, and removal of the old canes is important. When growth is rank, of course it is necessary also to remove some of the new as well as the old.

EDITORIAL DEPARTMENT

Timely Topics among Farm Folk

James C. Knollin, Managing Editor

Is Bossy Getting a Square Deal?

"THERE'S a reason," asserts the coffee-substitute advertisement.

"Why?" asks the coffee announcement.

These two well-known phrases are mentioned by the Division of Animal Industry of the State Department of Agriculture, in connection with the increasing consumption of tablets said to contain the energizing "vitamines."

For it is pointed out, the directions for taking these tablets almost invariably suggest that they be accompanied by a glass of milk **three times daily.**

Since milk is one of the foods richest in vitamines, most easily digested and most complete in its relation to the human diet, it is pointed out, possibly equal benefits would be obtained by the patient who drank the milk without taking the tablets! Just a passing thought, suggested by a booster for the dairy industry and not in any way intended to belittle the work of patent medicine manufacturers.

But Bossy doesn't get much of the credit, the report continues. "Why?" "There's a reason!"

After all, however, dairy interests and cow owners should be grateful to the tablet makers. They are boosting the consumption of milk! And this is something in the way of compensation for pre-empted credit.

Rapid Strides in Dehydration

ORCHARD and FARM subscribers who have been following Professor Arthur W. Christie's interesting and valuable articles on dehydration, written especially for this magazine, will be impressed by his statement that during the past two years more than 150 dehydraters have been built in California.

Because of the rapid developments and improvements in this great science, the dehydrater of the present day is quite different from the pre-war "dryer," which was erected more as "rain insurance."

The modern dehydrater actually produces a food far superior to the sun-dried product. And while the industry has passed through the throes of experiment and unwise exploitation, the principle is sound and of tremendous importance to this State.

Among the successful devices is that invented by T. I. Casey, of Oakland, now being manufactured in the Bay City. On the Ewer ranch in the Napa Valley one of these machines is said to have turned out prunes of such high quality as to indicate a possible revolution in prune-handling methods.

In Los Angeles an ambitious program is being worked out by the American Fruit Products Corporation, now in process of organization. And elsewhere, throughout the State, successful inventions are being tried out, and plans formulated for conserving the millions of dollars worth of fruit and vegetables wasted annually.

Every fruit-grower should send for the new bulletin issued by the University of California, "Some Factors in Dehydrater Efficiency," written by Professor Christie and Professor W. V. Cruess who has been equally interested in developing this great science.

In this pamphlet it is suggested that the spelling *"dehydrater"* be used to indicate the machine, and *"dehydrator,"* to indicate the operator.

To secure the bulletin, address "Director, Agricultural Experiment Station, Berkeley," and ask for Bulletin No. 337.

Burning Corn for Fuel

ALTHOUGH the farmers of America have donated thousands of tons of grain for shipment to starving foreign nations, the fact remains that much corn will be burned for fuel in the Middle West this winter unless the price advances sharply.

This seems almost inhuman when we think of the terrible want described by some of the relief associations. Yet there are thousands of farmers who have given gladly and freely to relieve the sufferings of others and yet cannot afford to haul grain to the shipping point, sell it at 20 or 30 cents a bushel, buy coal at present high prices, and haul the fuel back.

No less an authority than Secretary of Agriculture Wallace has issued an official statement to the effect that with corn at 20 cents a bushel, it is equal in fuel value to a fair grade of western soft coal at $10 a ton. The Secretary adds that in districts where corn is very cheap and coal expensive, it will pay not only farmers but also residents of country towns, to burn corn instead of coal.

Those who are inclined to look askance upon this declaration, well may consider the farmer's viewpoint, and instead of condemning him, develop a plan whereby some of America's idle wealth could be drafted for necessary charitable work, and paid to the farmers for the grain they have raised at such great expense.

But, after all, it will be only a very small percentage of the total crop that will go up in smoke. Much of it will be marketed on the hoof in the form of that good old mortgage-lifter, the hog!

Fighting Bugs With Bugs

THE remarkable results in pest control secured through introduction into infested areas of natural enemies of these pests have received attention from time to time in the columns of ORCHARD and FARM.

Probably many subscribers, however, do not fully appreciate what is being done along this line, especially in the Southern California citrus districts.

It is stated that introduction of the "Aphycus," a South African parasite, into black-scale infested citrus groves, reduced the fumigation expense nearly 50 per cent in one season.

And while climatic conditions may have something to do with this showing, there is no doubt of the efficacy of the aphycus (pronounced a-phi-cus) in "running down the scale."

To Harry S. Smith, in charge of the Bureau of Pest control, California Department of Agriculture, is due much of the credit for California's leadership in this work. The Bureau is constantly on the lookout for new agencies with which to carry on its activities. "Bug eat bug" has proved a profitable slogan for California fruit growers, and interesting new developments along this line may be looked for in the near future.

A Rich Harvest in the Wilds

THIS is the season when many boys and men are realizing upon their spare time by trapping the fur-bearers of forest and stream. Strangely enough, even in the foothills and valleys of California, Nature carries out her plan of providing warmer coats for winter months. And while animals taken in these warm districts are not as "prime," perhaps, as those caught in the mountains and colder sections, nevertheless their pelts are in demand at attractive prices.

But California, blessed in so many ways, has also tens of thousands of acres of mountains and forests, where experienced trappers match wits with the denizens of the wild and where snow forms the open book upon which are traced the movements of the fur-bearers.

Yet one does not need to be a mountaineer or plainsman in order to achieve success as a trapper. The rudiments of the "game" are easily learned. Among the most reliable sources of information are the booklets and bulletins issued free of charge by fur dealers who buy raw skins, a number of whom advertise in ORCHARD and FARM.

Then, too, there are the free bulletins on trapping of the United States Department of Agriculture, which may be had for the asking. (Address Division of Publications, U. S. D. A., Washington, D. C.)

Now is the time to harvest the fur dollars that grow all about us. BUT—be sure to acquaint yourself with the State game laws!

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MY HOGS---HOW I FEED AND CARE FOR THEM

THIS is the article we promised last month. Mr. Meiners, whose plucky fight against big odds was described in the December number, tells of the methods that have made him a successful breeder, feeder and exhibitor. His is no "dude ranch," for it boasts of no unnecessarily expensive equipment, and the hogs are paying their own way.—Editor.

By Carl G. Meiners

I AM making my hogs pay for their equipment, as well as for part of the implements and other improvements in the balance of the ranch program.

Following the plans of an older and very successful hog raiser, which I consider nearly ideal, I cut my investment to the size of my pocketbook. There were a number of old shacks, long unoccupied, on the ranch. The lumber from these furnished most of the material for my farrowing houses and pens.

Utility as the Keynote in Breeding

This Hampshire sow, a blue-ribbon winner, is one of the most prolific in the Cheery Acres Rancho herd. She was "snapped" in the pasture in breeding condition, having been "let down" carefully after the show season. Meiners believes hog raising should be a business rather than a pastime. He has some prize Hampshire types—but not at the sacrifice of utility.

A little new lumber and some brown stain completed the working material, together with odds and ends of old boards that had accumulated. I built individual hog-houses, 6x8 ft. inside measurement (with roofs that can be raised if desired) in separate enclosures, 18x24 ft., for each sow.

These enclosures adjoin one another, thus saving considerable material. There is a fenced-in alleyway running the length of the houses. Each pen has a gate, which when opened fits across the alleyway. One of the great conveniences of this arrangement is that it makes it simple to put your sows where you want when you bring them into the farrowing pens.

BREEDING METHODS

I breed the sows so as to have them come in as closely together as possible, which makes it a great deal more handy to take care of them, and also gives the little pigs a more even start. I keep exact dates on breeding, of course. My sows after they are bred and have been kept in the breeding lot 21 days to make sure they are safely settled, are turned out into alfalfa pastures when weather permits, or into large corrals in the rainy season.

The mature sows get only alfalfa, the young ones a light barley ration, in addition. I pasture when possible, feed fresh cut alfalfa as second choice, and when neither is possible, give cured alfalfa, chopped into half-inch lengths. I grind all the barley I feed, except for the fattening stock, and soak all barley not to exceed 24 hours. I have the simplest sort of machinery, the grinder and the alfalfa chopper together costing around $100. I run both with my small tractor.

My older sows go into their farrowing pens ten days before they are due, the gilts two weeks, so as to get thoroughly used to their quarters. I use oak leaves, mixed with a very little short, dry grass for bedding in the houses. The houses are provided with guard rails to protect the little pigs. This fall we had some very warm days during farrowing time, and the sows preferred the out-of-doors, so I rigged a little eucalyptus-bough shade over a corner of each pen, and provided these with guard-rails and bedding also.

SOWS GET GREEN ALFALFA.

I give my sows plenty of green alfalfa right up to the time they come in. The first days they are in the houses they get about a gallon of half-and-half bran and barley twice a day in a slop. This is given at each feed, starting the 7th day before they are due, (or the 9th day with the gilts) as they often come in a day or so ahead of date). I gradually increase the proportion of bran in the feed and during the three days before they are due in, they get a half feed of bran only, in a very thin slop, twice a day.

At first I used to stay right in the farrowing pen when a sow was pigging, but, after having lost part of a fine litter one night when my presence with a lantern made the sow very uneasy, I decided it was the best policy to leave them alone. I have found the Hampshires such good mothers that they very rarely lose a pig in farrowing. Sometimes a gilt will refuse to go into the house to farrow, but even then they rarely injure a pig.

If a sow that has just farrowed shows restlessness and begs for her feed when the rest are being fed, I give her a little very sloppy bran; otherwise I do not feed her for the first twenty-four hours. When the pigs are a few hours old, I cut off the long "wolf-teeth" in the sides of their mouths with little nippers. At four days they are ear-marked according to a very simple notching system.

FEED INCREASED GRADUALLY

The first 48 hours the sow has received nothing but a little bran. Then gradualy I increase the feed, using barley and bran. By the time the pigs are 10 days old the sow is getting about two gallons of half barley, half bran. All the time after the first 48 hours they are getting green alfafa. Each morning, except the last few days before and the first few after farrowing they get a small handful of digester tankage apiece. They also get a little stock powder from time to time.

At three weeks the little pigs are eating alfalfa; at four weeks barley, from the mother's feed. I usually put a little barley on ground near the sows' troughs for the little ones. As the pigs grow, I increase the sows' feed to what they will clean up, also decreasing the proportion of bran gradually to one-fifth.

I have a number of lots, half-acre to acre in size, with running water. Some have oak trees for shade; others have simple shades of boards. When the little fellows are five weeks old, they go out in these lots with their mothers. I turn out one sow per day, so pigs will get their bearings and not rob other sows. I put four or five sows with pigs in each of these fields, selecting those that farrowed close together.

LITTLE PIGS HAVE CREEP

The little pigs have a creep where there is ground and soaked barley for them at all times, but eat their alfalfa with the sows. All these lots can be irrigated, and furnish considerable alfafa and clover pasture for the sows and pigs, which I supplement with fresh-cut alfalfa.

WEANING THE PIGS

I wean the little pigs at two months, except in the case of an especially valuable litter, which I keep with the mother til she weans them herself if it does not make the time for breeding again too late. After weaning, the little pigs get all the barley and alfalfa they can eat, with a little tankage, and the little skim milk I have, for at least a month. Then comes the first culling, when all but those that give real promise of making excellent breeding stock go into the pork herd out into alfalfa pastures to rustle for themselves.

In the winter time the pork herd goes into the big oak grove. I supplement the acorn and grass feed with an occasional load of chopped alfalfa in the winter, according to the quantity of the feed in the woods. I take the pigs out of woods, when they weigh about 100 lbs., as they begin to put on some fat along with their growth from then on, and a corn-fed pork is almost unsalable.

The pork herd get no grain till three weeks of a month before going to the butcher, at which time I shut them up in the fattening pens, when they get all the soaked barley they can eat. By this method I have no trouble in getting the Hamps up to at least 175 lbs. average at seven months.

TWO LITTERS A YEAR

I raise two litters of pigs a year, having my spring litters come in from March first on; fall litters from September first on. Usually I wait until sow has had at least a three weeks' rest after weaning before re-breeding, but if she has farrowed rather late and is not suckled down too thin, I breed occasionally as soon as possible after weaning, and have had very good litters that way.

I have come to the conclusion that in raising breeding stock it pays best to keep only 8 pigs with mature sows and six with gilts, and am following this rule strictly. I have found also that a runt, or the occasional pig that gets crippled when very small, is not a paying proposition to raise. However, the Hampshires seem to have very few runts, unless in litters of 10 or more.

NO EXPENSIVE BUILDINGS

As we have a mild climate, much oak-shade, and plenty of cool, gravity

Feedin' Pigs

By Jason Wells

"THEY'S one job that I useter hate—
"Always at it, early and late—
"Feedin' pigs!
"They never got enough to eat—
"Fought and scrambled; hurt my feet—
"Hungry pigs!

"KNOCKED th' bucket from my hand—
"Grunted, squealed to beat th' band.
"What a mess!
"But listen: Things are diff'rent now!
"I know the name of every sow
"An' pig, I guess.

"WE have self feeders; grinders, too—
"A modern hog-house, big an' new,
"An' such as that.
"Then Dad, he took me in, you see,
"An' part o' the profit goes to me,
"When they are fat."

AND thus has hate been turned to joy—
As it will with any boy.
No more his disposition sours,
Because he knows the pigs as "Ours"!

irrigation water running through the fields where hogs are kept, I find a simple board roof is the only building I need for my hogs, in addition to the farrowing pens.

I keep my boars in a big lot several acres in size. My big boar has a pretty good disposition, and by putting smaller boars in the same field when they are mere youngsters, I have no trouble in keeping them together in that big space.

By feeding alfalfa in one corner and grain in the other, and having both these feeds in the end of field farthest from the running water, I force the boars to take plenty of exercise.

The young boars have a creep where they get their barley by themselves. A slide gate locks them in this for about an hour, till the two big boars have cleaned up their feed.

MINERALS FED REGULARLY

I am using a mixture of charcoal, slaked lime, sulphur, salt and copperas for all the hogs. The lime, salt, and especially charcoal are most popular with them, and are used in largest proportion. They also get hardwood ashes. A little stock food is given each week.

All growing hogs, except the pork herd, get just a little tankage. A hundred-pound sack lasts a week for 40 pigs from weanlings to spring stuff, or for a dozen sows with pigs.

But to return to the pigs I save for breeding stock. At a month after weaning time, the gilts go into alfalfa pasture, or in winter into feed lots by themselves, and get a barley ration of 4½ pounds per 100 pounds live weight daily plus plenty of alfalfa. The boar pigs go into the boar lot for similar food. At all times creeps are provided for the smaller animals.

THREE DIVISIONS

From time to time more pigs are sorted into the pork-barrel division. I figure on three divisions for my hogs. The largest (say 75 per cent of boars and 50 per cent of gilts) goes to the butcher. The remainder again is divided into two parts. The larger contains the stock that is ideal for the farmer who wants to raise Hamps for pork only, or as a cross on other breeds.

These can be sold, with a good profit to the seller and a big one to the buyer, at 50 per cent over pork price, without 'papers.'

Then the remainder, say 5 per cent of the whole boar crop, and 10 per cent of the whole sow crop, makes my 'tops,' to sell or keep as registered Hampshire breeding stock.

All the hogs have running water except the sows in the farrowing pens. For these I use metal troughs, so fastened on home-made hinges against one side of the pen that the sow cannot get her nose behind them to dump them, but so that I can readily tip them to clean them.

DISINFECTS WITH CARE

I use a good deal of disinfectant containing creolin around the farrowing pens. For my pork herd I have a dipping vat through which they swim. In winter I use crude oil instead. The breeding stock I spray with creolin solution. The little pigs are dipped in a mild creolin solution both while still with mothers and while in weaning pen. The big boars get their bath with a scrubbing brush.

By dipping, spraying, or scrubbing two successive times within 12 days, one kills both lice and eggs. And thus it is not necessary to dip very often, especially in cool weather. It is necessary always to watch out not to get too strong a solution of the dip or disinfectant, as it will blister. Two teaspoonfuls per quart of water for the bigger hogs, and one for the little pigs, is about right for the creolin.

PROTECTION OF SHOW HERD.

I have never used the double treatment vaccination against cholera, as I am situated far from any other hog ranch in a district free from cholera, and know of several cases where the double treatment has caused cholera with heavy losses. If cholera by any chance should develop, I would immediately have a veterinarian use the double treatment; also, if I lived in a vicinity where many hogs were raised. had all the hogs I took to fairs vaccinated against cholera by single treatment and also against septicimia.

My show herd having been thoroughly immunized, and the protection still extending for several weeks, I did not find it necessary to isolate them from the rest on returning from the fairs. The boar was not too fat for breeding service, and I put him back in with the other boars, though I am not giving him as much barley as during fair time. I did not have any females above the junior pig class along, but bought a prize-winning senior yearling. I keep her where she gets only alfalfa and water, and has to walk quite a distance between these, and think that within a few weeks she will be in good breeding shape.

Hints for Goat Raiser

DO not throw away cheese whey, as growing kids will drink it with a relish and it has proved to be very beneficial. Warm the whey and feed it plain or put a handful of dry calf meal into it. A raw egg fed to a kid with bloody dysentery will effect a cure within a few hours.—Mrs. J. H. Getz, Gardena, Cal. (H)

When Cows are Housed In-
Look Out for Disease

YOU cannot afford to have the winter season wipe out the summer's dairy profits. Watch out for sickness; don't overlook the slightest unhealthy symptom. Keep your eye on the milk yield of every cow. A little extra care in winter will keep the entire herd producing at a profit the year 'round.

Cows in barn—with very little green feed, much roughage and concentrates—need every aid possible to keep assimilation and digestion strong. Let these functions lag and the milk yield falls. The cow becomes an easy prey to serious disease.

Kow-Kare is the winter cow-health guardian in the best dairies because it supplies just the assistance needed to tone up the digestion and assimilation and keep the genital organs healthy. Besides its wide use in treating Barrenness, Abortion, Retained Afterbirth, Scouring, Bunches, Milk Fever, Loss of Appetite, etc., Kow-Kare is more and more being used during the winter months as an aid to general health and increased production. It acts directly on the milk-making organs, keeping them normal and healthy.

Kow-Kare costs so little and means so much to cow owners that no dairy should be without a constant supply. General stores, feed dealers and druggists can supply you at the new reduced prices of 65c and $1.25.

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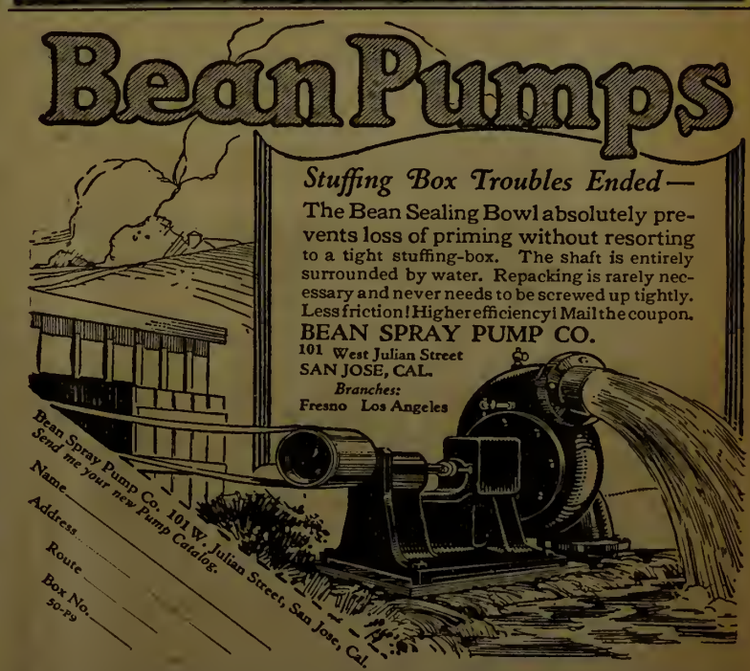

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Ben Gonnadooit Says

Every year 'long about this time I makes a lotta good resolutions. And every year I breaks most of 'em before th' end o' th' first month, the whitch, as enny one will agree, is simply a waste o' vallyble time.

But this year I've figgered out a new plan, whitch is in brief, namely, to make resolutions WITH reservations. By providin' fer onforeseen circumstances, a feller kin experience all th' glow of self-satisfaction while makin' his resolutions, without in no way hurtin' his conscience when they is broken.

F'r example—I resolves not t' smoke any seegars ONLESS somebody gives 'em to me, in whitch case it'd be criminal waste t' th'o' 'em away. Again—I resolves t' git up every mornin' at five-thirty, ONLESS it is rainin', or I don't feel well, or I fergits t' set th' alarm. Here's another—I resolve t' show my wife more consideration, EXCEPT when her demands appears to me entirely onreasonable.

And, Finally—I resolves t' do no fishin' on Sunday, PROVIDIN' I have plenty o' time for fishin' on week days.

(Signed) *BEN GONNADOOIT.*

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HOW TO PROPAGATE FROM SLIPS

By George Gautier

THE season for propagating from slips is nearing an end. Towards the last of January in most sections of the State, the dormant period for plants and trees is over.

Readers who desire to make use of this method, therefore, should hasten to select the plants they desire while the time is "ripe."

How many of us have wished for certain perennial flowers, shrubs, plants and trees, admired in parks, nurseries or the gardens of friends, only to find that nursery prices were necessarily high and that we must wait weary months or years for results from seed. There is another way, however—giving quicker results than planting and less expensive than buying. It is the "slip" method.

Almost every perennial can be propagated from slips; and, what is more, with comparative ease. Deciduous fruits, grapes, figs, all varieties of shrubs and plants, ornamental and flowering; trees of almost every kind; roses, begonias, heliotrope, verbenas—almost everything that bears branches and foliage readily can be grown from slips.

Plan to Beautify the Home at Low Cost

"I WISH I had that in my garden." How often have you made this remark? In this brief article, Mr. Gautier tells how one may secure the most rare and beautiful plants, shrubs and trees at small expense and without waiting for them to grow from seed. No doubt many of our readers will want to start a "slip bed" immediately upon reading these simple instructions.—Editor.

THREE IMPORTANT RULES

In propagating from slips there are only three cardinal points to remember: (1) Season for planting; (2) selection of good slips; (3) necessity for irrigating.

The best time of the year to set out slips is during the season in which the shrub, tree or plant is dormant. This season usually begins in October and ends in January. The spring and summer months are not favorable, for in these months the plants are putting forth new branches and foliage, which draw heavily upon them for sap. If branches were to be cut at this time they would experience too severe a shock to be used for slips.

KIND OF WOOD

It is of importance, also, to select the right kind of wood. Never use branches or shoots that have been put forth during the present year. The best wood is that which is from one to two years old. When you have selected your wood, cut it into lengths ranging from eight to twelve inches. It is not advisable to have the slips shorter, for they must be set deeply in the earth, and it is useless to have them longer for the tops will dry out before the slip takes root.

Slips may be set in the ground almost anywhere in the garden. But it is best to devote a corner or plot to them, for if they are set out here and there they are likely to be neglected. In a plot by themselves they will command attention by virtue of their very numbers. One is not likely to let a bed of slips or plants die of want, but easily can overlook an isolated plant.

PREPARING THE SOIL

Preparing the soil for slips is a simple matter. All that is necessary is to have the soil well cultivated. It may be fertilized, though that is not essential. It is rather better to mix an abundance of sand with the soil. In fact, slips will take root readily in a box of sand, providing they are regularly watered.

Some propagators set their slips in a hot bed. A hot bed is valuable in that it supplies the ideal temperature at which slips most readily send forth roots, but amateur gardeners can obtain success by simply setting them in the open. An old window pane placed over the bed of slips at about four in the afternoon and removed at ten in the morning is quite as helpful as a hot bed.

HOW TO PLANT

When you have prepared the bed for your slips, plant them rather deeply in the soft earth. Let about half the slip be covered. Then water the bed thoroughly. Put enough water on the bed so that it penetrates the soil at least as far down as the slips extend. Do not fail to keep the bed well watered, especially when you notice the slips beginning to send forth buds and leaves.

They are then commencing to take root, and the roots are extremely delicate and require every care until they become robust. Once slips have been set out, under no circumstances move or interfere with them. If disturbed, the delicate root system will be broken, which invariably means a loss. As soon, however, as the slips begin to bud and it is evident that they have taken root, they will register a steady growth, and with the coming of spring, will be strong enough to be transplanted.

WATER ESSENTIAL

Before transplanting, water the bed well, so that in taking up the plants you will not injure the roots more than necessary. After placing the plant in its permanent place, give it plenty of water, and be sure to keep it well watered until you notice that it has begun to grow anew.

If one loves a garden there is no reason why he may not have it filled to overflowing with hundreds of different species of flowers and shrubs. Friends are always glad to donate cuttings from their gardens, and every garden has some flower or shrub that we admire.

FROM THE PARKS

A visit to our parks also will have its reward, for at this time of the year park gardeners are busy pruning and cutting away, and for the mere asking one may take home splendid wood of a dozen different shrubs and flowers that in a year or two will add to the beauty of one's garden.

Tractor Tracts

By Walter H. Gardner

WATCH OUT FOR THE STEAM TRACTOR! Hear her whistle? No? Well, she's coming. The problem of a burner that can't flood has been solved. The feed is positive—there can be no possible accident or mischance. An electric switch starts it. There is no pilot light—no fooling with matches. There's just one minor problem—the water. It should be pure distilled water and that isn't found in tank, river or rain-barrel. Maybe we'll have to use our brass coils for this instead of—well, anyway, the steam tractor has few troubles, yet these are easy to find and expensive to fix. The gasoline motor, on the other hand, has many troubles that are hard to find and easy to fix. But wait a little while until some steam tractor is perfected and make your own comparisons.

W. H. Gardner

THERE'S A DISEASE CALLED SILICOSIS! It is insidious and often fatal. It is caused by the admission to the lungs of fine dust particles or sand. Workers in cement mills wear masks to prevent it—yet many a farmer works long hours under worse conditions without protection. That's foolish and unnecessary. Most tractor makers now can supply fenders that keep the dust from being thrown up in the driver's face.

TRACTOR DRIVERS USED TO SCORN COMFORT! They rather gloried in dirt; in hard seats; in breathing exhaust gases; in stiff cranking—somewhat as football players are proud of twisted noses and gnarled knees! But now the wise man buys a machine with a few little conveniences, well knowing that a little less fatigue means a little more work!

HAULING ON THE HIGHWAY WITH TRACTORS is beset with complications. According to the California State Motor Act a machine is permitted to use the highway if it has no grousers or projections extending more than a quarter of an inch beyond the periphery of tire or tread. But what's the tread of a track machine? Who interprets the law—county speed-officers, road supervisors or state commissioners? There are at least three counties where no leeway at all is granted the farmer who wants to use the highways to haul foodstuffs to market with tractors. Some tractors damage the roads and some don't. Should there not be intelligent discrimination, and should not the farmer be favored more than at present?

NOT LONG AGO A CERTAIN TRACTOR OWNER whose machine requires constant lubrication of the tracks became alarmed lest the oil contaminate the soil. Then, one day, he sat him down and figured it all out. He used 6 gallons of oil a day at the most, and went over 8 acres a day—covering his field about four times a year. At the end of ten years he would have left ten gallons of oil on each acre. As his soil is worked but eight inches deep this would mean one quart of oil to every 275 cubic feet—or one and one-half drops of oil to every pound of soil—provided there was no evaporation, no oxidation and no leaching by rain or irrigating water! He decided to seek something else to worry about!

TRACTOR DETRACTORS CAN CONJURE UP a considerable array of facts and figures proving that the "cat-skinner" has had his day and that it is again the turn of the mule-skinner. To the writer's mind their best argument is in the condition that the tractor men have themselves been responsible for, OVER-SELLING! For many a farmer of small acreage owns a machine that does him little more good than a span of mules, but costs quite a lot more. Others have been led to expect more from their machines than any man-made mechanism can yet accomplish. But grant every contention of the mule men—there is still the "angle of convenience." The tractor owner has the power to rush a late season's work; to pull a sub-soiler; to harvest grain in the brief period between its ripening and the "shelling out" that drying winds induce. And he not only has an extra hour's work (or sleep) in the morning but can motor away on a summer's vacation with a conscience free from worry about his stock. Maybe he does have to pay largely for these comforts and privileges. He is willing to!

TRACTORS ARE FINDING AN EVER WIDER RANGE of use. They have recently "mined" mussels on the Florida coast; built the Stanford University stadium; constructed a Mississippi River levee; pulled snow plows; hauled a city's garbage; operated a printing press when the power failed a Southern California town; run the dynamo of another municipality in time of emergency, stripped the overburden from iron-ore, etc. Many an inventive farmer also is putting his machine to new uses.

ONE FARMER SAVED THE OLD OIL from the crank-cases of his automobile and tractor and used it to lay a dusty road corner. Another killed a troublesome strip of roadside weeds with the same waste.

A Source of Accurate Information—"I consider ORCHARD and FARM a great farm paper and do not want to miss a single copy of it. I derive a great deal of information from reading it."—W. W. Reasoner, Los Gap, Wash.

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Imperial Valley vineyard owners market their crop from three to six weeks ahead of any other section. This early crop, together with the tremendous demand from Eastern cities alone, insures huge profits. Very conservative estimates show an *average* net profit last year of more than $400 an acre to owners of Imperial Valley vineyards. Do *you* want to share in these profits?

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INCLUDING the setting out of vines and care for three years, when vineyards come into full bearing. In three years you will have a paying vineyard ready for you to live on. Or, if you wish, we will handle your vineyard for you after the expiration of this time at a very nominal cost, sending you your profits every year. (The main Brawley canal traverses this property, insuring ample water supply at all times.)

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"BOB" JONES' CORNER

Little Stories of Farming

By ROBERT E. JONES

Contributing Editor of Orchard and Farm.

Raisins From Australia—A fruit grower who claims to know informs the writer that Australia shortly will be shipping raisins to California. Whether or not this be true, it is certain that Australian fruit products already are in California markets. Almost any grocer will sell canned Australian fruit jam. This is certainly like "carrying coals to Newcastle."

"Grabbing Off" Honors—In a recent article published in the Holstein-Friesian World of Syracuse, N. Y., George H. Dacy writes: "Briefly, California is on her way to grab off more than a proportionate share of the National dairying honors yearly distributed, and, from an impartial viewpoint, it looks as if it will take a vast amount of beating to subdue her aggressive spirit." We have known this a long time. The victory at Chicago this year certainly was a striking illustration of what California can do in raising the right sort of animals, too. It was as if a penny-ante college football team had beaten the best in America. For California is a little new at the game.

See News in Farming—Daily newspapers are coming to realize the need of giving the farmer news of his business. I have just received from an old friend, Tom P. Brown, formerly with The Examiner of Los Angeles, but now with the National Coal Association at Washington, D. C., the editorial page of The Philadelphia North American of November 26th. This page carries a two-column editorial on "The Ascending Cow." Among other things the editorial tells of a West Virginia dairyman, who, when he began testing, had thirty-one cows. He tested and reduced the herd to twenty-six. With better feeding methods these twenty-six cows produced more than the thirty-one.

What Becomes of Wine Grapes?—Did you ever wonder about the method by which California wine grapes, shipped East in carloads, became a consumable commodity? George F. Maddock of Sacramento was curious about it and investigated while in Chicago recently. He asked a grape dealer on Water street who distributes wine grapes to the Latin trade. The system is this: A big truck goes out from the dealer's place of business to the homes of customers. Boxes of grapes are unloaded onto the sidewalk. This big truck is followed by another which carries a crushing machine. The grapes then are crushed and the purchaser takes the juice in his own containers. The crushed seed and skins are carried away and the juice goes upstairs to the owner's home. What becomes of it thereafter the story sayeth not.

Startling Chicago—When the California College of Agriculture so sensationally achieved honors at the Chicago International Livestock Show in December, it won more than 50 per cent of the money offered in the college classes. This statement was made to me by Prof. Gordon H. True, who was in charge of the California exhibit, on his return from Chicago. Think of it! There were thirteen colleges from the principal pure-bred livestock States of the Union in competition against California. During the last five or six years that California has been exhibiting, the number of championships won has been all out of proportion to the number of animals exhibited. California's record for grand championships at the Chicago International now is as follows: 1917—Won both grand championship and reserve, the first with California Favorite; 1918—Won grand championship for shorthorn steer with California Model; 1919—Won reserve grand championship with California Jock; 1920—No exhibit; 1921—Won grand championship with Lulu Mayflower, the first heifer ever to win the honor. In addition to winning in stock, California students won first and third in the Saddle and Sirloin Club essay contest on the subject: "Livestock as a Factor in Saving Waste on the Farm." Curiously enough, West Virginia boys won second and fourth in this subject, leaving out of the high honors students from the corn belt, where livestock is most prominent. Also, curiously enough, first honor for corn went to Connecticut and not to the corn belt States.

Vive and Tilly—Pacific Coast States now have the two leading cows of dairydom, for Vive la France, owned by Pickard Brothers of Marion, Ore., rapidly is casting a shadow over Sophie 19th of Hood Farm, among the Jerseys. The Jersey Club's report shows that in five lactation periods she has produced 4414.86 pounds of butterfat as against 3772.50 pounds for Sophie. For five periods Vive even leads Tilly Alcartra, the great California Holstein, which has 3859.94 pounds for five periods. But Tilly has an eight-year record of 6257. Only time will tell whether Vive can beat this record. Vive beat Tilly for the first four years, yet slumped the fifth year below her record.

California Tobacco—Californians generally may be unaware that this State is concerned in the tariff on tobacco, yet this is a fact. Senator Shortridge, in his appeal for protection, told the Senate Finance Committee that Placer, Yolo, Yuba, Mendocino, Sacramento and San Joaquin Counties were interested in seeing a tariff put on Turkish leaf. Alfred Aram of Fresno is President of the Associated Tobacco Growers of California.

President Says Co-operate—"Every proper encouragement should be given to the co-operative marketing programs," says President Harding in his annual message to Congress. "These have proven very helpful to co-operative communities in Europe." It isn't necessary to go to Europe for evidence. We can furnish right here in California examples of how great a boon has been co-operative marketing to the farmer.

The Temperamental Hen—Leland Fobes of Loomis, Placer County, poultryman and one time musician, has a keen appreciation of the temperamental hen. He knows that the egg layer is a high strung creature and that it is quite as important to keep her happy and in peace and harmony as to feed her properly. Therefore he has this sign at the entrance to the lane between his poultry houses:

NOTICE

Ring the bell to call attendant.
Please do not pass beyond this sign.
We are endeavoring to make conditions for the fowls as favorable as possible for best results. You will help us by observing this notice, as strangers worry and frighten the hens, which causes very noticeable decrease in egg production. Any questions concerning the plant will be cheerfully answered to the best of our ability.

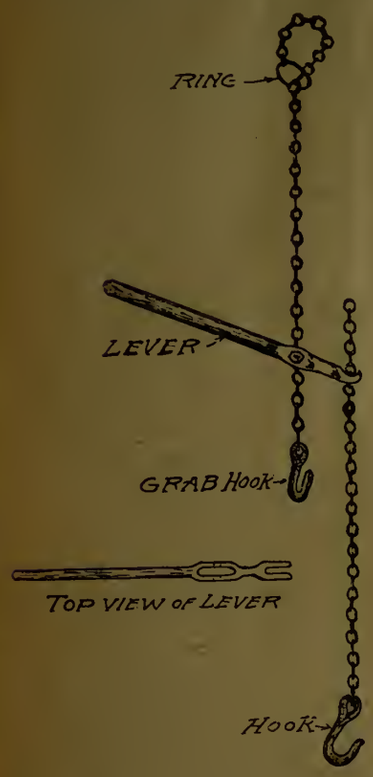
Do not get the idea from this, however, that Fobes is not cordial. Quite to the contrary. He has hundreds of visitors, for his plant has proved to be one of the most efficient for egg production in California.

Fence Wire Stretcher

TWO chains and a short iron lever make a good stretcher for either barbed or woven wire fencing.

The first chain has a ring to slip, and hug the snubbing post and a grab hook to catch between the links of the second chain.

The second chain has a round hook



to make fast to the fencing to be stretched.

The steel lever bar is 18 inches long. It is made with a slot 4 inches from the hook end. This slot slips over the first chain. There is a loose bolt that passes through the slot and through a chain link.

There are twin hooks at the end of the lever to "straddle" a link and "grab" a link in the second chain.

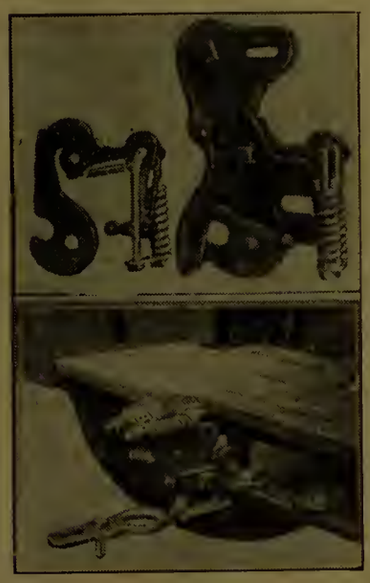
As the chains are drawn taut the grab hook on the first chain engages a link in the second chain and holds fast while the lever is given a new hold.

This same device is useful for binding a load of lumber or tightening the binding pole over a load of hay.—Herbert A. Shearer.

Safety Hitch for Tractor Drawn Implements

MUCH trouble is experienced by tractor operators when plowing by stones, rock ledges, old trees, roots, etc., causing share breakage. Plows are equipped with break pins, of course, but these have proved an inadequite protection. Therefore, the farmer will be interested in the safety release hitch illustrated. This hitch automatically uncouples when the implement drawn hits an obstruction, and then automatically couples when the tractor is backed into the hitch again.

The hitch can be set to release at any tension required, or it can be locked so that it will not release. The new hitch is a recent invention.



Safety Tractor Hitch

First Annual Pacific Slope Dairy Products Show

THE First Annual Pacific Slope Dairy Products Show, held in the California State Armory, Stockton, December 6-11, was the first of its kind ever held west of Chicago, and was epochal also in exhibiting a comprehensive and up-to-date line of products manufactured in the States west of the Rocky Mountains.

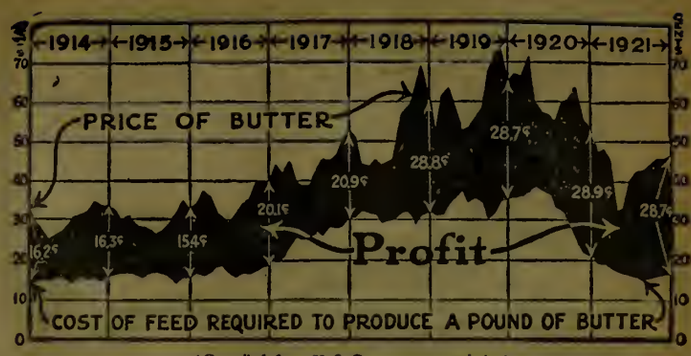
It not only furthered the spirit of co-operation in the promotion of all interests dependent upon the dairy cow, but as well tended to show those intimately interested in the dairy industry something of the scope and importance of this industry in all its activities. All in all, the show was a big success and fulfilled every expectation.

Participating in the show were manufacturing organizations, milk distributers, exhibitors of dairy products machinery, equipment and supplies, the University of California, the State Department of Agriculture of California, the United States Department of Agriculture, and California Dairy Council. The show was given under the auspices of the latter.

The interior of the armory presented a scene of lively interest and attraction, with special electrical illumination, flying flags, and attractively decorated booths. Vocal [illegible] and orchestral numbers contributed to the entertainment, as well as many well-known speakers.

Too much in commendation cannot be said of General Manager Sam H. [illegible]n, Manager L. Diamond and Assistant Manager Thomas T. Kell for their efforts in making the show a [illegible]

[illegible] the Second Annual Pacific Slope Dairy Products Show shall be held is problematical. The alternative of either Oakland or Fresno is presented for consideration, and plans already are under way for a larger show.



(Compiled from U. S. Government statistics)

Look at this diagram!

It shows just how profitable the production of butter or butter-fat has been since 1914, and that it pays just as big today as ever.

The top line of the black area shows the price of butter, while the bottom line shows the cost of feed required to produce a pound of butter. The thickness of the black area then shows the spread between cost of feed and price of butter—or the net profit. For example, near the end of 1921, feed to produce a pound of butter cost 16.9 cents; butter sold for 45.7, leaving a difference of 28.8 cents per pound, or 170% profit.

De Laval Cream Separators have helped more than any other factor to put the butter business on such a profitable basis—by saving cream, improving butter in quality, saving time, and saving skim-milk in the best condition for feeding.

Let a De Laval start making and saving money for you now. See your De Laval agent or write for full information. Prices on pre-war basis. Sold on easy terms.

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The telephone in some countries is the luxury of the rich, but in America it is used by practically all the people. This universal service is due in large measure to foresight in engineering and manufacture.

Switchboards with millions of parts, other apparatus of highest efficiency, and all necessarily of complex and intricate design, cables and wires and a multitude of technical devices enable our country to lead the world in telephone service.

All this telephone equipment is made in a factory which is recognized throughout the world as having the largest production and the highest standards of workmanship and efficiency.

This factory, controlled through stock ownership by the American Telephone and Telegraph Company, has been for forty years the manufacturing department of the Bell System; with the result that the associated companies secure equipment of the highest development, made of the best materials, produced in accordance with the requirements of the public, and with the certainty of moderate costs.

Economy in the Bell System begins with the manufacture of equipment.

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One Policy, One System, Universal Service, and all directed toward Better Service

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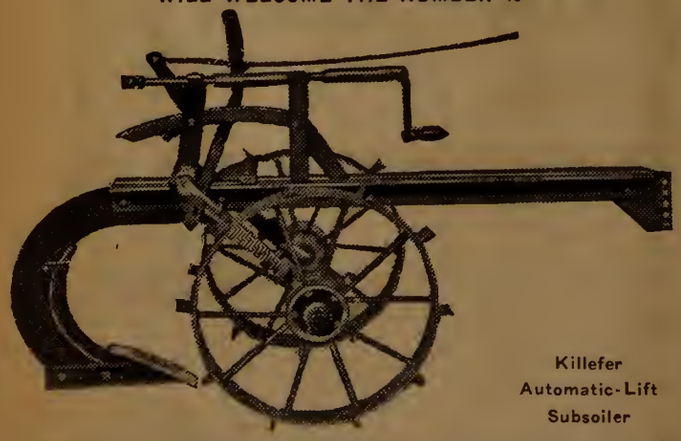

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AUXILIARY FOOD BODIES

Scientists Delve Into a New and Wonderful Realm, with Interesting Developments Relating to Plants and Animals

By John Eugene Hasty

TWO years ago the word "vitamines" was unknown outside of the laboratory. Today—thanks to the advertising of certain manufacturers—it is a fairly common term.

However, there is still much to be said regarding vitamines, aside from the fact that they are present in yeast; and there is still much to be learned about them. Yet the results of the research work already done in this field are of utmost importance, particularly to agriculture.

Experiments have established the fact that animals which receive food with a high vitamine content are heavier and healthier than stock fed a low percentage of vitamines.

They have proved also that in cases where vitamines are entirely lacking in the feed, the growth of the animal stops; and that when vitamines are supplied the growth is resumed. THE HEALTH AND VIGOR OF AN ANIMAL SEEMS TO DEPEND ENTIRELY UPON THIS AUXILIARY FOOD BODY.

The expression concerning a horse "feeling his oats" may be taken literally if the word "vitamines" is substituted for the word "oats." And this increased vigor which vitamines supply is characteristic not only of animal growth, but, in a degree, of plant growth.

Agriculture and the New Science

VITAMINES — what are they? Auximones — still more mysterious. These terms will appear with increasing frequency. Are you familiar with their meaning? The discoveries described in this article are of such importance to farmers that we urge every subscriber to read it carefully. And—here's a warning in advance—although it is technical, you will find it of absorbing interest.—The Editor.

PREVIOUS EXPERIMENTS

Vitamines are not a recent discovery. Six years ago the Edinburgh Medical Journal, discussing the prevention of beriberi, stated that "Funk's vitamines has been proved to be the most powerful and rapid remedy." Experiments involving vitamines were, of course, in progress during the years prior to this time. The discovery came about in the following manner:

In the past it was the belief of physiologists that a perfect diet consisted of carbohydrates, fats, protein and certain salts, in proper proportion; and that these food elements contained calories, which, when the food had been consumed, were converted into units of heat and energy; that is to say, these food elements were considered sufficient to sustain life and health. The theory was correct as far as it went, but it did not go far enough, for it was apparent that a person or an animal might consume the proper amount of these elements and still exhibit symptoms of poor nourishment and susceptibility to disease.

TESTS WITH RICE

Some light was thrown upon the subject when, during the latter part of the last century, the Japanese navy tests showed that out of 276 men fed on a diet of polished rice, 169 developed beriberi; but only a few cases occurred among the same number of men fed on a mixed diet. The test provided grounds for the belief that beriberi was caused by an excessive diet of rice.

Some time later Dr. Eijkman, a Dutch scientist, made further investigation involving 279,621 individuals, who, at different times, were prisoners in the Dutch East Indies prisons. Because these prisons were situated in different localities with different local customs, the prisoners were supplied with different kinds of rice.

Out of 37 prisons where unpolished rice was used only one of them had cases of beriberi.

Out of 13 prisons where both polished and unpolished rice were used six had cases of beriberi. And out of 51 prisons where the rice supplied was entirely of the polished variety, 36 had cases of the disease.

Evidently, something which acted as a preventative of beriberi was removed from the rice during the polishing process. This substance, whatever it was, did not exist in the main husk of the grain, for that had almost always been removed in all cases. Therefore, it was present in the very thin layer—the "silver skin"—which lies on the outer part of the husk-free seeds.

SUBSTANCE IS ISOLATED

Working upon this assumption, Dr. Casimir Funk, an English physician, made an alcoholic extract of rice polishings, and succeeded in isolating the substance, which appeared as colorless, needle-shaped crystals. Further experiments showed that yeast and wheat also contained this substance. As it was vital to life and health, Dr. Funk called it "vitamine." (The proper pronunciation gives the letter "i" in the first and last syllables the short sound, as in the word "it.")

In 1906 Professor Hunt of the Wisconsin Agricultural Experiment Station conducted a series of experiments regarding vitamines as they affected the health and growth of cattle. His work was continued by Dr. McCollum, who used rats as subjects of his experiments because they required less food, and reproduced so rapidly that the effects of the diet upon the offspring could be studied.

Dr. McCollum found that rats fed wholly upon a calory diet—consisting of the proper balance of carbohydrates, fats, proteins and salts—soon stopped growing. Following the addition of cheese, butter and similar animal fats to their diet, growth was resumed. This caused Dr. McCollum to conclude that these foods contained a new vitamine. He called this vitamine "Fat Soluble A"—that is, a vitamine associated with certain fats. Similarly, the vitamine discovered by Dr. Funk was called "Water Soluble B," because it was soluble in water.

Fowls which were denied the Water Soluble B vitamine lost weight rapidly and developed neuritis, while fowls which received it remained healthy. Moreover, by administering Water Soluble B to the first group of fowls, the disease was checked successfully.

A RECENT DISCOVERY

Recently a third vitamine has been added to the list. The discovery of this vitamine, known as "Water Soluble C," came about from the fact that fruit juices, such as lime juice and lemon juice, are valuable as a treatment for scurvy. If the "silver skin" of the rice grain prevented beriberi because it contained Water Soluble B vitamine, perhaps fruit juice, which prevented scurvy, also contained a vitamine. An analysis of lime juice showed this theory to be correct. Animals which were denied Water Soluble C vitamines became semi-paralyzed, with a marked brittleness of the bones. When the vitamine was administered these symptoms disappeared. In the treatment of scurvy either Water Soluble B or Water Soluble C is effective, but in the treatment of beriberi only Water Soluble B produces beneficial results.

It is not, however, the therapeutic properties of the vitamines that I wish to emphasize. Rather, the important point is this: An animal may be fed upon a properly balanced calory diet, and still fail to grow. Yet such a diet may be perfectly wholesome, perfectly

digestible. It may be absorbed and the energy in it liberated. But it will not stimulate growth. Something is lacking—something that is clearly of great importance. That something is the vitamine. When these are supplied the very same diet becomes efficient.

AN ELEMENT OF MYSTERY

The question may be asked: What is the nature of these vitamines and where do they occur? It must be confessed that science cannot give a complete answer to either part of the question. Vitamines can be isolated, precipitated and redissolved; but thus far they have defied analysis. Nevertheless a number of facts concerning their character and general behavior have been collected. One of these is that there are at least three vitamines of importance to nutrition, one associated with fat, the other two with water. All three must be present in sufficient quantity in any diet providing proper nutrition.

The distribution of the known vitamines in foodstuffs covers a wide range. Water Soluble B is abundant in grains, seeds and yeast. White flour, corn meal and polished rice do not contain it. Milk contains both the Water Soluble B and Fat Soluble A. The latter also is present in cream, butter, eggs, cheese and animal fats, but is lacking in vegetable fats. This does not mean that Fat Soluble A does not occur in vegetables from which the fats are extracted. It is present in the vegetables, but is left behind when the oil and fats are pressed out. However, it is not present in lard, although lard is an animal fat.

Water Soluble C is found in most fresh fruits and vegetables. It is less stable than the other known vitamines and is easily destroyed by cooking and dehydration. The following table, while it is by no means complete, will serve as a guide to the comparative occurrence of vitamines in natural foods. The zero indicates a lack of vitamines, the figure 1 a small amount, the figure 2 a medium amount, and the figure 3 a large amount. A question mark is used in case of doubt as to whether or not vitamines are present:

FOODSTUFFS	FAT SOLUBLE A	WATER SOLUBLE B	WATER SOLUBLE C
Animal fats (margerines)	1	0	0
Apples (green)	?	0	3
Beef (fat)	2	0	0
Beets (red)	1	0	1
Brains	1	2	?
Bread (white)	0	0	0
Bread (whole wheat)	1	2	0
Bran (wheat)	0	1	0
Butter	3	0	0
Cabbage (fresh)	1	1	3
Cabbage (dried)	1	1	0
Carrots (young)	2	2	3
Carrots (old)	1	1	1
Corn (yellow)	2	2	0
Corn (white)	0	1	0
Cream	2	1	?
Egg (yolk)	3	2	0
Egg (white)	0	?	?
Fish (lean)	0	1	?
Fish (fat)	1	1	0
Heart	1	1	0
Kidneys	1	1	0
Lard	0	0	0
Lemons	0	0	3
Lettuce	2	0	3
Liver	2	2	?
Meat (lean)	0	0	?
Milk	2	2	1
Milk (skimmed)	1	2	1
Onions	?	0	3
Oranges	0	0	3
Peas (fresh)	1	1	3
Peas (dried)	?	1	0
Potatoes	0	2	2
Rhubarb	0	0	3
Rice (polished)	0	0	0
Rice (unpolished)	1	2	0
Rutabagas	0	2	2
Sweet potatoes	2	1	3
Tomatoes	2	1	3
Wheat (whole)	1	2	0
Wheat (germ)	1	3	0
Yeast	1	3	0

The Auximones

THERE is another auxiliary food body which is essential to plant growth. English scientists came upon the trail of this substance during a series of experiments concerning nitrogen fixation of soil by bacterized peat. Some remarkable results in the stimulation of plant growth were obtained.

These experiments—and others conducted along the same lines—demonstrated that bacterized peat possessed certain growth-stimulating elements that could not be accounted for in the known manurial elements present.

Further investigation showed that the stimulating substances were effective in very small quantities and that they were soluble in water. In fact, the action of these unknown substances was so similar to the action of food vitamines that a test was made to determine accurately their effect upon growing plants.

About fifteen pounds of bacterized peat was treated with alcohol. The extract was filtered off and dried in a vacuum to preclude foreign substances from the air. The residue then underwent a chemical treatment which finally resulted in less than one-half gram of dry substance.

Wheat seedlings were selected for the test. These seedlings were planted in pots containing sand, ten seeds to the pot. There were nine pots, divided into groups of three. The first group received a complete food solution made up of nitrogen, phosphate and potash. The second group received the same solution, but with an alcoholic solution of bacterized peat added to it.

The third group also received the food solution; but in place of the alcoholic solution of bacterized peat, the dry substance mentioned above was added. At the end of the period the wheat plants were uprooted, dried and weighed. The third group—the plants that had received the dry substance obtained from bacterized peat—showed an increase in weight over the first group of 29.4 per cent, and an increase in weight over the second group of 8.3 per cent. This gave further confirmation to the theory that bacterized humogen contained substances very similar to vitamines.

EXPERIMENTS WITH PEAT

As Funk had isolated food vitamines by treating an extract of rice polishings with silver nitrate, a solution of the dry substance obtained from bacterized peat was similarly treated. A brown precipitate was produced. This was dried in a vacuum and made up into a solution. A series of tests, sim-

(Continued on Page 34)

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The Dayton Automatic Water System brings you the comforts of a city home.

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The Dayton system is operated by electricity. It will run for months with but little attention; costs but a few cents a day to operate; can be run from any current—central station or private plant.

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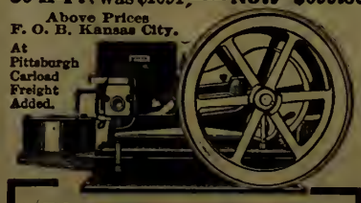
Above Prices F. O. B. Kansas City. At Pittsburgh Carload Freight Added.



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Excess Soil Moisture Causes Much Injury to Citrus

ONE of the most common of the many causes of poor health of citrus is the injurious effect of over-irrigation. In such cases the trees show rather unhealthy foliage, the leaves being chlorotic or yellow, and small in size. An examination of the root systems usually indicates that there are not many fibrous (feeding) roots, and that in the worst cases many roots are dead and rotting. On one occasion recently observed the only roots keeping the tree alive were those near the surface, and the main roots were dead.

VARIOUS EFFECTS

Excessive water has several injurious effects on the tree. Where over-irrigation is practiced, there is free water present for a long period. Soil bacteria, which are so necessary in rendering plant food available to trees, cannot work where water is in a free state. Also, air is forced out of the soil for a long period, and even though the roots are surrounded with water, they cannot absorb a sufficient quantity, and consequently may starve for water and plant food.

Again, whatever plant food is available in the soil becomes so diluted that it would be impossible for trees to absorb enough to meet their needs. In fact, this is such an unhealthy condition for roots that they become weakened, and either remain in an inactive state, or are attacked by rotting fungi.

CAUSES OF OVER-IRRIGATION

There are many causes which contribute towards over-irrigation of a grove. It sometimes happens when the irrigation "run" is too long, that by the time the lower part of the grove becomes sufficiently wet, the upper part is saturated. This is the most frequent cause.

There are instances also in which the irrigator is desirous of doing a thorough job and is not acquainted with injurious effects of excess water.

There are other instances when irrigations are given at too frequent intervals for the particular type of soil. There are sandy loams which should be irrigated every two weeks, and adobe soils which can go as long as 90 days between irrigations.

It is necessary to know the moisture requirements of the partcular soil and to base irrigation upon those requirements.

In still other cases, the excessive water is due to a plowsole or hardpan which dams up the water. A plowsole can be broken up, but where there is hardpan, only enough water should be applied to wet the area above the hardpan.

Another factor that sometimes enters into the reason for applying too much water is where irrigation companies have a system of distributing water at definite periods. If the time allotted to a grower elapses without an irrigation, then the grower has to await his next turn. He therefore irrigates in his turn, and usually applies too much.

Every citrus grower should have a soil auger, and with it determine soil and soil moisture conditions.

It is very essential that citrus growers pay particular attention to irrigation. There are so many disastrous results that can be obtained from its misuse and abuse.—V. L. Blanchard

Salt and June Drop

WE had one of the largest and finest pear trees in our yard that I ever saw. Each year it would be covered with blossoms, but when the young pears became the size of cherries they would drop, leaving only about a half dozen fruits to mature.

We did not pay much attention to it but eventually decided to chop it down. One spring I dumped a half barrel of brine and salt in which fish had been salted down, around the roots of the tree, thinking this treatment would kill it. Instead, that year we had a record-breaking bearing of fruit, two loads of props being required to hold up the limbs, and even then some of them broke under the weight.

Is it possible that June Drop is caused because of lack of salt in the soil?

W. E. BANCROFT, Aguila, Ariz.

REPLY BY GEORGE P. WELDON.

Salt, of course, is an alkali, and rather dangerous to be present in the soil in large quantities. I have known of sodium-chloride being so abundant in certain localities that fruit trees would not grow. We would expect, therefore, that the application of salt in large quantities would injure trees.

In the case of the pear tree, however, it is possible that the quantity applied was not sufficient to do more than slight injury, and a slight injury to any tree frequently will result in sudden and temporary heavy bearing, because of nature's instinct for reproduction.

Also it is possible that during the year in which the tree bore so heavily, some other variety close by bloomed for the first time, thus giving it the benefit of cross-pollination.

To Increase Yield

WHAT can be done to increase my orange and lemon yield? Some of the trees are covered with buds, but very little fruit results.—A Subscriber.

REPLY BY GEORGE P. WELDON

If the trees are located favorably and pruning, irrigation and fertilization are such as to keep them healthy and in good condition, they should bear fruit. Sometimes trees become devitalized because of the attack of fungus diseases or certain insect pests, such as black scale, mealey bug, etc. Commercial orange and lemon growers find it necessary to fumigate their trees with hydrocyanic acid gas about once in two weeks to control these insects.

I would suggest that you get in touch with the nearest county horticultural inspector or possibly County Horticultural Commissioner H. J. Ryan of Los Angeles. An examination of the trees might reveal the cause for their failure to bear.

Loss of Peaches

WHAT causes peaches to drop before ripening? Last year there was a good-sized crop, but hardly any of the fruit ripened satisfactorily.—John Halley, Long Beach, Cal.

REPLY BY GEORGE P. WELDON

There are a number of different reasons for the loss of fruit on peach trees. Your trouble sounds a little like "brown rot," a disease due to a fungus organism. Curl leaf also is due to a fungus. This sometimes results in the dropping of the foliage and the fruit.

I would suggest that you thoroughly spray your trees while dormant with liquid lime sulphur, using it at the strength of one gallon to ten gallons of water. This material should not be applied after the trees have bloomed or started growth.

Gumming of Plum Trees

I Am having difficulty with a gumming disease on my plum trees. How can I remedy this trouble?—B. W. G., Hollywood.

REPLY BY GEORGE P. WELDON

There are various things that will cause the gumming of plum trees and I would suggest that you get in touch with County Horticultural Commissioner J. F. Ryan, Hall of Records, Los Angeles. I am sure either Mr. Ryan or one of his inspectors would be glad to look at these trees and determine what is causing the gum to ooze from them.

There is a blight of stone fruits known as bacterial gummosis that affects them very similar to the way pear blight affects pear trees.

When this disease is present, it is necessary to prune away all affected portions of the tree. Borers frequently cause gumming, as will also unfavorable soil conditions or injury of any kind.

Showed Some Speed

Two darkeys had selected the dark of the moon for an investigation of Colonel Higgins' chicken coops. But the Colonel was waiting for them with a shotgun loaded with rock salt.

After the smoke had cleared away he had one badly-scared culprit by the collar. "Where's your partner?" he demanded gruffly.

"He-he gone away f'm heah, Boss."

"When do you think he'll come back?"

"Come back? S-say, ef he come back as fast as he went, he'll be back yesterday!"

Orchard Step Ladder

ABOUT eight feet is the length of this step ladder. An eight foot ladder will permit the picker to reach high enough to reach all of the fruit on a low headed fruit tree, except that which grows on the top central branches.

There is a good deal in selecting the material for a ladder. It should be light, but it must be safe. It is easy for the picker to break a leg if the ladder should break.

The stringers should be made of straight-grained wood that does not split easily. Basswood or spruce meet the requirements about as well as anything, but there are varieties of pine that make good ladders.

The rungs should be of hickory, oak, swamp elm or some similar timber that will not break off short without splintering. If a ladder round slivers or splinters it won't break down suddenly.

The stringers of this ladder need not be heavier than 7-8 by 3 inches,

tapered to two inches at the top, provided that the wood is tough and straight grained.

To make a fancy ladder both the stringers and the legs should be tapered.—Herbert A. Shearer.

HE SMOKES MEAT WITHOUT A FIRE

Washington Farmer Simply Applies Liquid Smoke—Flavor Is Improved and All Shrinkage Prevented

Victor Hillhouse of Conconully, Wash., smokes meat by simply painting it with Wright's Smoke.

"I am convinced that it is the only system of smoking meat," says Mr. Hillhouse. "No more of the smoke house way for me. I wouldn't be without Wright's Smoke if it cost $10."

Thousands have found that the Wright method improves the flavor, keeps meat sweet and free from insects and prevents all shrinkage. Wright's Ham Pickle, mixed with salt, sugar-cures meat to perfection.

Get these genuine, guaranteed Wright Pure Food Products from your dealer.

Simply send your name to E. H. Wright Co., 826-C Broadway, Kansas City, Mo., for valuable illustrated book on expert methods of curing meat. Also learn how you can get a complete, highest grade butchering set at lowest factory cost.—Adv.

Lower Machine Prices
—a factor in a brighter outlook for 1922

MOST of the readers of this paper know that we have reduced our prices on farm machines for 1922. The lower figures apply on practically our entire line of grain, hay, and corn harvesting machines, plows, tillage implements, seeding machines, etc.

Reductions in prices of farm machines and other articles the farmer buys is one of the many indications pointing to continued improvement in the farmer's situation. The War Finance Corporation is steadily pouring aid from its billion dollar fund into agricultural communities to finance the farmer. Freight rate reductions on stock, grain, hay, etc., now going into effect, will save many millions for the farmers. Land values are now on a sounder basis. For 1922, better labor at lower cost will be available, better marketing conditions are being evolved, and recent tariff legislation also should tend to increase farm product prices.

All these factors indicate that more efficient production by modern methods and improved machines will mean greater profit for the new year. You cannot afford to postpone the purchase of needed machines. Where repairs have been made again and again, beyond the point of serviceability, waste and loss are pretty sure to follow. The present prices will enable you to replace the old with efficient modern machines so that best use may be made of the opportunities that are certain to come to the farming world.

The International Harvester Line of Farm Operating Equipment

Binders
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Huskers and Shredders
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Beet Seeders
Beet Cultivators
Beet Pullers
Cotton Planters
Grain Drills
Lime Sowers
Broadcast Seeders
Tractor Plows
Horse Plows
Disk Harrows
Spring-Tooth Harrows
Peg-Tooth Harrows
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Feed Grinders
Stone Burr Mills
Cane Mills
Potato Diggers
Wagons

If you are interested in learning some of the new prices or in looking over any individual machine, the International Dealer in your vicinity is at your service. Or you may address your inquiry direct to us.

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Big Money Boring Wells

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Earth augers, rock drills and combined machines. Engine or horse power. *Write for easy terms and free catalog.*

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New improved 1922 model.

Chicks will soon be hatching and you'll want them to be healthy and hardy. Keep them warm and comfortable.

The Reliable is the lowest priced quality brooder.

Burns kerosene (blue flame) on an oil level, without valves to clog. No fumes, smoke or gas, and no overflow of burner.

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Three sizes:

30 inch..... 350 chicks or less
42 inch..... 500 chicks or less
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HART'S NEW BROODER

PLANS FOR HART'S NEW IDEAL BROODER

Hart's brooder is ideal because there is no overheating, chilling, worry or grief. No getting up nights to tend to the heater. No thermometer or thermostat used. No burnt air in the brooder room or hover. Don't need to teach chix to roost. False roosts are not used. A child can operate it. Very simple. Turn any old shed into a brooder house. Directions for new house. Costs very little to install. $10 to $12 for a 500 chix size. 200 to 400 chix sizes cost less. Low cost of operation. Average oil consumption for 500 chix size is 1 gallon a day. More at first, but less toward last part of brooding. You buy the heater of your hardware dealer, or perhaps the oil stove that you have will do. City gas is ideal fuel for Hart's brooder if an absolutely steady flow is available. At Hart's Poultry Farm both coal and other oil stoves were thrown out and replaced with Hart's brooder. State plant at Salem, Ore., has 8 of Hart's brooders.

COMBINATION BROODER AND COLONY HOUSE WITH HEATER FOR $5.00 TO $10.00 FOR 100 CHIX

A new money saving invention, similar to Hart's large brooder, except the house. House costs about $7 or less made of 1x4 flooring for floor, ends and back. Roofed with good shingles. Any old lumber can be used, however. Broods 100 chix or less. Large enough for 50 pullets as a colony house on range. Built on runners. One horse can move it anywhere. Heated by small incubator lamp. Average oil consumption less than one quart a day. House and heater combined costs less than any other heater alone and far better. Just the thing for city lots and farms where only a few hens are kept. This brooder can also be installed in the corner of most any building.

HART'S METHOD OF FEEDING AND CARE OF CHIX

Feeding directions tell not only just what to feed but exactly how much—right to the ounce—no guess work—not the "hit or miss" kind of directions. No gapes, toe-picking, leg weakness, diarrhoea, bloody droppings in Hart's chix. And a big saving in feed bills. Very little high-priced meat scraps are used. 2000 pullets were raised at Salem, Ore., in one year without meat, and many were ready to lay in 3½ months. Correct brooding and feeding will prevent nearly all chick troubles.

Other items are Hart's method of feeding layers and breeders, culling and selecting the breeders, money and labor saving devices that are worth many times the price of the book.

Hart's Poultry Book, $1.00

W. H. HART, R. 3, Box O, Beaverton, Ore.

Hart's Poultry Book is the only one sold on an absolute guarantee of satisfaction. This journal guarantees this ad. You can't lose. About 500 books already sold in California. Send for "Others' Opinions."

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Best method to record your daily egg yield. Ready for mailing in December. Write for your copy. A postal will do.

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Large assortment of the best varieties in Fruit and Nut Trees. Small Fruits, Shade and Ornamental Trees, Shrubbery, Roses, Vines, Perennial Plants and Bulbs. Fully equipped Landscape Department. Planting plans furnished for residence grounds, large estates, Parks, Cemeteries, etc., also Tree Surgery done. All stock and work the best. Write today stating your needs.

OREGON NURSERY COMPANY, Orenco, Ore.

Opportunities for More Salesmen

POULTRY ON TWO ACRES

(Continued From Page 6)

off the roosts and busy. Mr. Young is an enthusiastic advocate of the "daylight-making plan," and states that he has used the lights every year from fall to spring, without any noticeable effect upon the percentage of hatch (unless it be an increase) and with a marked increase in egg production.

METHOD OF FEEDING

His feeding methods are up-to-date and quite uniform. The outstanding factor is gradual evolution from one ration to another. No sudden and radical changes are made. The result is natural and normal development of young stock, with very small losses and practically no digestive troubles or diseases. Croup, chick diarrhoea, and other common diseases occur rarely in the Young flocks.

The chicks are started on prepared cracked-grain chick food. After 5 days a "chick mash with egg" is added, given only one-half hour in the morning the first day. Gradually the time is increased, so that after about 7 days the tray is left before the chicks from 8 to 12 each morning.

When the chicks are five weeks old, they are given mash with buttermilk, which is left before them until about 1:30 p. m. When they are 15 weeks old, Mr. Young commences gradually to mix in the regular dry mash used for the older fowls, and when they have reached 5 months, they are given straight dry mash, which finally is left before them constantly. Until this time, however, it is removed early in the afternoon each day.

EVOLUTION OF CHICK FEED

Gradually the young stock is accustomed to grain morning and evening, first receiving a scratch mixture, prepared especially for chicks; this is converted gradually to "growing scratch," to which are added whole wheat, cracked corn and milo after the "babies" are six to eight weeks old. Following are the proportions:

Growing scratch	25 per cent
Cracked corn	25 per cent
Wheat	25 per cent
Milo	25 per cent

The next step is to replace the growing scratch with whole barley, and the final grain mixture is made up as follows:

Corn	20 per cent
Milo	20 per cent
Wheat	30 per cent
Barley	30 per cent

A dry mash is kept constantly before all the adult birds.

The breeding pens are supplied with a special "breeder's" mash.

In addition to the shell and grit, a tonic mixture is given occasionally.

This, in a nutshell, is the simple feeding plan. Prepared foods are used entirely, except for the grain mixture, the ingredients for which are purchased in quantities. For example, 15 tons of barley recently was stored in the granary at one time.

TRAPNESTING PULLETS

The breeding end of the business is in process of development. Mr. Young proposes to mate the best of his trapnested pullets this year to cockerels of known high producing strain, and to save the cockerels secured from this mating for use with the entire flock. His fowls are noted for their vim, vigor, upstanding carriage and sturdiness.

The culled cockerels are fattened on the place, a number of special coops being kept on hand for this purpose. These are stacked in a corner until needed. When in use, they are arranged conveniently upon the ground.

The troughs for grain are tacked on the outside, and water jars also are placed outside the coops, so that there is no danger of waste or soiling. The cockerels are taken from the brooder house at from 8 to 9 weeks of age. They are given a special fattening mash (prepared), twice daily—all they will clean up. At the same time, rolled barley soaked in lactein is fed. In the evening they receive one feeding of cracked corn.

COCKERELS SOLD EARLY

They are fed only 14 to 18 days and sold weighing 1¼ to 1½ pounds. Mr. Young believes in putting on the weight in the shortest possible time and getting rid of them before they consume expensive feed in unprofitable ratio to the rate of gain. The fattened cockerels are picked up by buyers with trucks at the ranch.

The eggs, too, are bought at the ranch, where they are graded by weight. An interesting grading table, shown in the accompanying illustration, was devised by Mr. Young.

All these operations are carried out with such thoroughness and system that practically all of the work is done by the owner and one helper. The visitor is impressed by the orderliness and neatness of the place, which reflects not only good business acumen, but also the pride of its owner.

AN ATTRACTIVE "PLANT"

The young poultryman and his wife well may be proud of their little "ranch" which fronts upon the boulevard between Downey and Whittier, Los Angeles County, and is surrounded by citrus and walnut orchards.

Here they enjoy every advantage of city life—water, gas, electricity, and all comforts, within a stone's throw of a thriving town and only 40 minutes' drive from the heart of the city. Yet the fresh air of the open spaces, the freedom from noise and dust, the valley warmth and the ocean breezes are

"Close-up" View of Grading Table

With an egg-case on either side and the basket used for gathering resting upon the rear "shelf," the grader places his scales on the table at the center. The space beneath the table is used for record-sheets or books. The method of using this device is shown in the illustration on page 6.

theirs also. Their bungalow home is a model of convenience, and the grounds are landscaped attractively.

REMARKABLY PLANNED

The most remarkable feature of the little farm is its apparent freedom from crowding. This reflects the most careful planning. For, although the equipment includes a pump-house, machine shed, granary and other small buildings, in addition to those mentioned, there is reserved considerable of the two-acre space for garden, and at no point does one gain the impression of lacking elbow-room. Yet, it is this very concentration of equipment that reduces the labor and increases the efficiency.

Mr. Young is said to have refused $25,000 for his "plant." He is more interested in expansion than in disposing of his holdings, present plans contemplating the purchase of additional acreage.

THOROUGH ACCOUNTING

Egg and feed records are kept accurately; in fact the entire bookkeeping system is thorough and efficient. Yet, the young poultryman was loath to give out the figures as to his net profits. He cautioned against underestimating the cost of attaining success.

"The beginner, even with plenty of capital, should make up his mind that it will require at least two years to get started," warns Young. "Moreover, it will require considerable money to get started right. I came out here nearly five years ago from Iowa with about $20,000 and before I knew it, most of this had gone into my plant. And nearly all the buildings were completed before the increase in cost of construction that came just during and after the war. I raised all my own pullets from baby chicks. I think two-thirds of the failures in the poultry business are due lack of capital, and nearly one-third to reckless expenditure of capital without the experience to back it up."

"Can you give some idea of the interest on your investment to date?" he was asked.

"Just put it this way," was the reply, after some deliberation. "Any one who makes a study of the business and who goes into it on the right basis, should be able to net, above feed and labor, at least $1.50 per hen per year." He smiled knowingly.

And so, I presume we shall have to let it go at that. But—$10,000 a year—that's SOME egg money—from two acres!

Green Feed Mill Under Shelter

Typical of the system and modern equipment of the Young poultry plant, is this machine shed, with cement floor, containing a motor-driven feed-mill for grinding grain and chopping green feed. The motor, hung high up under the rafters, is protected by a special box.

Timely Chicken Talks

By Bill Brahma

[Editor's Note—"Bill Brahma" has been raising poultry for 30 years. He has hatched chickens, ducks, turkeys, geese and squabs, with incubators, hens and even damp cloths in an oven! He has raised them in all kinds of contrivances and by all kinds of systems. He has conducted all sorts of experiments. One of his most important conclusions is that there is much more to be learned about poultry, and that possibly a few years hence, many of the theories accepted today will be scrapped!]

TELL me! If pullets are hatched in January and begin to lay in August, then put in a full year producing eggs (which establishes them as heavy layers) why should they be discarded if they begin to moult in July when they are 18 months old?

Yet certain experts say: "If your hens moult before August first, get rid of them!"

Chickens that are from good sound stock, have been well cared for and brought through their first six months; and are strong and healthy when they begin to lay will commence to moult just before they end the year's laying, and if it is in July well and good, they should be over the moult and laying again by November when eggs are at the highest price.

That the real danger of very early hatched chicks is not from an early moult AFTER their year's laying; it is from having a slight moult just about the time they first start laying, which generally results in keeping them back just when you need their eggs—and frequently it is 60 days before they get started again.

Within ten years California, the writer believes, will be the greatest producing and shipping center for eggs and dressed poultry in the world! Ten years ago local poultrymen were complaining of low prices because such great supplies were shipped into this State from the East and North. But now California is shipping immense quantities of both meat and eggs to far eastern cities and receiving premium prices for them. In fact, reports tell of enormous shipments direct to London, England, and the possibility of a regular market demand from the British Isles.

How many of our mountain "dry-farmers" could enjoy prosperity instead of simply "grubbing" for a living if they would keep a few hundred hens!

If you have decided upon your breed, get the best stock you can afford, paying more attention to quality than to quantity.

You Need a Farm in Canada

If you are to secure that independence, success and prosperity which has been the reward of thousands of American farmers who have preceded you.

¶ These farmers knew of the rich tracts of Canadian Pacific agricultural land for sale in Western Canada at low prices—open prairie, partially wooded or park and well-timbered lands—all virgin, fertile and productive. They knew they could not obtain such lands elsewhere at such prices—at an average of $18 per acre.

¶ They knew that Western Canada has carried away, year by year, first international honors for wheat, oats, barley and livestock.

¶ They knew of the success that had been won by farmers from their own state who had preceded them. They knew that Canadian farm values are steadily increasing and that each year they delayed they would have to pay more to purchase desirable farms.

¶ They wanted larger holdings for their growing families. They knew they could secure sufficient land upon terms unobtainable elsewhere—20 YEARS TO PAY.

¶ As a result, 16,000 American farmers took advantage of their knowledge and moved to Western Canada last year.

¶ In Canada the government and the railroads help the farmer in every possible way. It is to their interest to do so. Taxes are low; laws are just; transportation facilities and markets are excellent. Language, social customs, religion, money and other conditions are the same as in the United States.

Ask the Canadian Pacific about Canada — CANADIAN PACIFIC RAILWAY

Thousands of American farmers have made prosperous homes in Canada. There will be more this year. Can you afford not to follow them?

Investigate these facts for yourself and let us fill your need. Write today for information to

M. E. THORNTON, Superintendent of Colonization
CANADIAN PACIFIC RAILWAY
961 First Street, E. CALGARY, ALBERTA

Don't Miss These!

Among the many big features of the February number will be—

The Biggest Little Farm in California

This is the story of two women who have lived well for 20 years upon the income from one-half acre!

How to Succeed With Bees

Another practical, helpful article by W. B. Dickenson, who is writing a series for ORCHARD and FARM.

A Treat For Our Women Readers

(The Editor won't tell any more than this.)

A Wonderful New Surprise for the Children

Co-operative Livestock Marketing

An eye-opening article, written especially for ORCHARD and FARM, by M. A. W. Lee, head of the livestock department of the California Farm Bureau Exchange.

A Thrilling Bit of Fiction

A short story, by a new writer, brimming with pathos, love and humor.

ALL THESE AND MANY MORE

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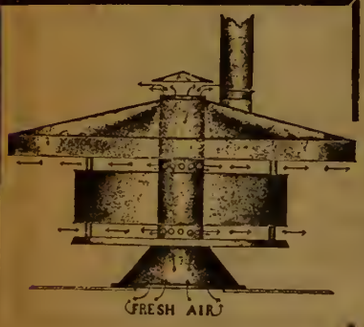

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ONE THOUSAND TURKEYS

By Marshall A. Stutsman

TO RAISE a thousand turkeys in one year, at an average valuation of $6 each, means $6000 gross receipts at Christmas time. The net cost of raising them should be about $1500, divided as follows:

Feed for breeding stock (if bought from farmers)	$100.00
Feed for poults (if insects and green feed available)	100.00
Grain stubble for range at 10c per acre	100.00
Housing expense, approximately	600.00
Labor for 12 months	600.00

If there is an abundance of green feed and insects in the spring for the stock, and if there are one or two industrious youngsters in the family who are willing to aid in cutting the labor cost, the above estimate may be reduced. On the other hand, the accomplishment of the task involves understanding, system and hard work. To know what should be done and to insist upon its being done are imperative.

SELECTION OF STOCK

The first and perhaps most important consideration is selection of breeding stock. They should be of good type and color, free from disease, and of high producing and healthy strain. The hens should not be exceedingly small, nor the toms too heavy.

The turkey hen should lay continuously, if "broken up" when she becomes broody and wants to set. Forty hens should average, therefore, thirty eggs each, as when one clutch is completed and mating takes place, the hen will commence laying another clutch in about a week. During the season, therefore, a total of 1200 eggs should be secured from forty hens.

These eggs should give a hatch of more than 90 per cent, and from the number hatched more than 90 per cent should be raised, and after proper deduction of the loss one should have 1000 turkeys to market in the fall.

But the importance of using great care in selection of breeding stock cannot be emphasized too strongly. I have produced the above percentages, but out of 1500 hens only 56 were selected as eligible for breeding, these being mated with American wild toms.

SELECTION FOR BREEDING

In selecting these birds for breeding, we observed all the points of the American standard of perfection, all tests of the Hogan system, general characteristics, indicating peaceful, quiet disposition, length of shank and type of breast bone and, finally, head covering (caruncles, feathers, or hairy), the two latter types being our preference.

Allow one tom to each four hens, with one or two extra toms held in reserve as protection in case of loss. By avoiding overbreeding, one will not only increase the percentage of hatches and poults, but also prolong the life of fine toms.

ARRANGEMENT OF PENS

Separate pens, about 20x40 feet, for breeding, should be constructed. Larger pens are better, and if they have shade and face an alfalfa field, so much the better. If the pens are built in a row, leave a five-foot space between them, so that it will be impossible for the turkeys to fight through the wire and cut their mouths, which may cause canker and even death. Another reason for this is that frequently one tom will irritate another, especially one that has been conquered previously in fighting. Sometimes on this account it is necessary to hang a strip of burlap to obstruct the view of the birds.

It is well to remember that if the entire flock is allowed to range together the toms will fight, the victorious "turk" at once assembling his "harem," with resultant loss in poults through infertility.

The nests should be placed in the pens so that the hen can be retained in the nest where she starts to set and will remain in a pen when taken from the nest to feed.

CONSTRUCTION OF NESTS

Our nests are arranged with six or more in a row, and are two feet square and two feet high. The nests should be cool and well protected from snakes, squirrels, gophers, mice, weasels, coyotes, wildcats, hawks and eagles. The nest proper should be on the ground, but built up with soil about six inches to prevent water from getting into it in case of rain. The nest, furthermore, should be smooth and free from pebbles or projections that might break the eggs when the hen rolls them. A light covering of

Experience vs. Theory

THE writer of this article, who is contributing a series to ORCHARD AND FARM, has had years of experience as a breeder and as a producer of market stock. This month he speaks in terms of the large flocks, which have made California famous as a turkey center. Questions of subscribers not answered in the article will be given prompt attention by mail.—Editor.

Not Turkeys; Not Hens. What Are They?

No, these are not young ostriches. They are "Turkens," so named by Z. T. Spencer of Santa Cruz, California, who has a flock of 45 of these strange birds, developed by him after years of experimental breeding. They represent an absolute cross between the Buff Orpington hen and the bronze turkey gobbler, their owner asserts. The turkens are said to be excellent layers, while the meat, according to epicures, cannot be distinguished from that of turkey. Mr. Spencer states that he has reached a standard and believes that his new creation will add to our commercial breeds a valuable fowl.

straw and a sprinkling of lice powder completes the nest.

The pens should be provided with sandy loam, so that the dust bath will not be neglected, as this is important in the control of lice. Shell and grit also should be kept in the pens.

CARE OF BIRDS

The care given the birds under confinement is extremely important. Always give feeds of good quality, free from mold, smut and musty odor. The grain should be the best, whether whole or ground. I have made it a practice to buy grains ground at the mill, such as barley, bran, feed meal and oats. Mix the four by using one-half bran and one-half equal parts of the three grains, to which add fish meal or ground beef scrap, eight pounds to every one hundred pounds of mixed grain. Finally, add one pound of charcoal. Feed this moist.

When alfalfa pasture is available, each pen should be let out separately for a short time, say fifteen minutes. This should be in the morning or evening. Clean, sharp sand should be available.

The owner should watch the birds when they are feeding as failure to feed is an indication of some trouble. The droppings always give indication of the nature of any approaching disease, but the appearance of the eyes and actions of the bird also show the danger signals.

As a remedy and also a disease preventive, I have made it a practice to use cholerine during the breeding season to keep birds "on their feed."

ON THE RANGE

When the 1000 young birds are "on the roosts," we are ready to turn them out on the range. I paid 10 cents an acre for 2200 acres of grain stubble in Riverside County. From June 15 to market time, when the birds are on the range, it is simply a matter of herding them until they are large enough to sell.

An ideal location for extensive turkey raising is in the arid or desert regions, close to valley grain fields. Thousands more turkeys could be fattened upon the waste grain in California fields. Some owners are handling them on a large scale, putting as many as 5000 upon the range annually.

Because of the danger from wild animals, it is customary to herd large flocks constantly, the herder being equipped with saddle horse, a gun and an intelligent, faithful Collie dog.

(Other articles by Mr. Stutsman, a practical turkey breeder and market producer, will follow.—Editor.)

Poultry Pointers

By V. O. Hansen

LOOKING back one year, we recall that during the latter part of January, 1921, the market price of poultry, especially hens and broilers, was higher than during December. Perhaps the same will hold true this year. If your market fowls were not ready for the holiday trade, why not prepare them for market after the New Year?

Leghorn pullets hatched during January should lay in four months. However, those hatched late in the season require from five to six months to complete their growth to the laying stage.

A Van Nuys poultryman explains why he raises Leghorn cockerels to broiler size. He claims the market returns from the cockerels cover the cost of the entire lot of chicks, plus the feed of both cockerels and pullets to time of marketing. This leaves the pullets as clear profit, less the cost of labor.

In selling a breeding male, give him a rest of about a week before shipping so that he will arrive in vigorous condition.

Poultry manure has great value as a fertilizer. For use with flower bed or garden, mix with sand or straw so that it will not be too strong. By using poultry manure a grower states he has raised fruit the first year from [illegible]

Odd shaped or soft shelled eggs usually indicate too rapid laying. Soft shells frequently are caused by lack of lime in the system. Use finely ground shell in the mash.

An egg ranch near Van Nuys has a standing offer of $10 for any chicken mite or louse found on his premises. This is all the more remarkable considering the fact that his hens run in flocks of 1000 to a pen. All the buildings on his ranch were erected by him so that he inherited no infestation from previous generations of fowls. Although he buys baby chicks each year, he allows no poultry dealer to bring his vehicle on the ranch.

THREE ONE THOUSAND DOLLAR PRIZES

ANSWER THIS PUZZLE

It Costs Nothing to Try

EVERY-BODY JOIN IN

How Many Objects Beginning With "C" Can You Find in This Picture?

That's what you are to determine. Sounds easy, doesn't it? And it is easy. Without any trouble whatever you can readily see such objects as "cow," "calf," "cigar," etc., can't you? Well the others are just as easy to see, but the idea is to see who can find the most. Fifteen cash prizes will be given for the fifteen best lists of words submitted in answer to this puzzle. The person sending in the largest and nearest correct list of objects shown in the picture, starting with the letter "C" will win first prize; second best, second prize, etc.

Get out a pencil or your pen and ink and start making up a list of words you can find in the picture above starting with the letter "C." It is not a trick puzzle and all objects are clearly shown. Nothing is hidden and you don't need to turn the picture upside down or sideways; it is interesting, educational and fascinating. Nothing hard; just different. Yes, all join in—old folks, middle aged and young folks. See who can find the most "C" words. As soon as you have your list made up, send it in and try for the big prizes.

It costs nothing to take part and you do not have to send in a single order for Laymore to win a prize. If your answer is awarded first prize by the judges, you will win $20, but if you would like to win more than $20, we are making some dandy cash prize offers, as shown in the prize box at the right, whereby you can win bigger cash prizes by sending in an order for our famous Laymore.

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3rd Prize.	20.00	300.00	1,000.00
4th Prize.	5.00	100.00	250.00
5th Prize.	5.00	50.00	125.00
6th Prize.	3.00	20.00	50.00
7th Prize.	3.00	15.00	40.00
8th Prize.	3.00	10.00	30.00
9th Prize.	2.00	10.00	20.00
10th to 15th	2.00	10.00	20.00

In event of ties, duplicate prizes will be given

OBSERVE THESE SIMPLE RULES

1. Any man, woman, girl or boy living in the United States, but residing outside of Minneapolis and St. Paul, who is not an employe or relative of an employe of the Mayer Hatchery may submit an answer. It costs nothing to try.
2. All answers must be mailed by February 4, 1922.
3. Answers should be written on one side of the paper only numbering each word 1, 2, 3, etc. Write your full name and address on each page in the upper right hand corner. If you desire to write anything else, use a separate sheet.
4. Only words found in the English dictionary will be counted. Do not use hyphenated, compound or obsolete words. Use either the singular or plural but where the plural is used the singular can not be counted, and vice versa.
5. Words of the same spelling can be used only once, even though used to designate different objects. The same object can be named only once; however, any part of the object may also be named.
6. The answer having the largest and nearest correct list of names of visible objects shown in the picture that begin with the letter "C" will be awarded first prize, etc. Neatness, style or handwriting have no bearing upon deciding the winners.
7. Candidates may co-operate in answering the puzzle, but only one prize will be awarded to any one household; nor will prizes be awarded to more than one of any group outside of the family where two or more have been working together.
8. There will be three independent judges; having no connection with the Mayer Hatchery, who will judge the answers submitted and award the prizes at the end of the contest, and participants agree to accept the decision of the judges as final and conclusive. The following three registered Minnesota school teachers, now teaching in the public schools of St. Paul, Minn., have agreed to act as judges of this unique competition:

Miss Mable Claire Kline, Miss Meta Goetsche and Miss Laura Johnson.

9. All answers will receive the same consideration regardless of whether or not an order for Mayer's Laymore is sent in.
10. The announcement of the prize winners and the correct list of words will be printed at the close of the contest and a copy mailed to each person sending in an order for Laymore.

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YOU CAN WIN $1,000

HERE'S HOW: If your answer wins FIRST, SECOND or THIRD prize, and you have ordered $2 worth of Laymore, you will receive $300 as your prize, instead of $20; FOURTH prize, $100; FIFTH prize, $50. (See 2nd column in prize list.)

Or, if your answer wins FIRST, SECOND or THIRD prize, and you have ordered $5 worth of Laymore, you will receive $1000 as your prize, instead of $20; FOURTH prize, $250; FIFTH prize, $125, etc. (See 2nd column in prize list).

How is that for a liberal offer? But, LOOK, there are THREE $1000 prizes. Therefore, if you stand FIRST, SECOND or THIRD and have purchased $5 worth of Laymore you will win $1000.

It takes only a $5 order of Laymore for you to qualify your answer for the THREE BIG $1000 REWARDS. Absolutely $5 worth is all. Of course, you can order two or three times this amount at one time, if you care to, but $5 worth is the maximum necessary to qualify your answer for the BIG $1000 CASH PRIZES.

In the event of a tie, each winner will receive the stipulated award.

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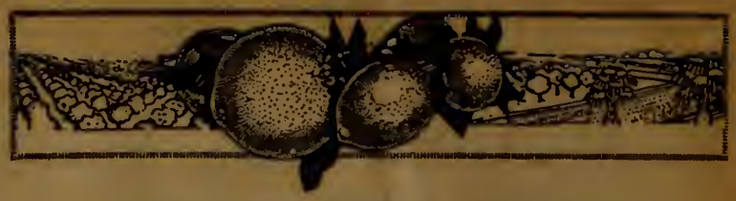


TIMELY CITRUS TOPICS

By Vincent F. Blanchard

Deep Plowing

OF all the fruits grown in California, citrus responds most to cultural care. It seems to be more sensitive to environmental conditions, and changes in these conditions influence the growth activity to a great extent.

The handling of soils is extremely important in endeavoring to obtain best results, and like most cultural operations for citrus there is much diversity of opinion in regard to the best methods. It is difficult to determine the best formula for any horticultural operation. What is applicable to one grove might not apply to another, for soil and climatic conditions vary to a great extent.

Citrus is grown here in California under somewhat different conditions from its native land, the tropics, where the root system is undisturbed. It is characteristic of a citrus tree to produce thickly matted, fibrous roots for feeders, and under tropical conditions the fiber roots became matted near the surface just beneath a natural covering of vegetative mulch.

But conditions are different here. We do not have natural mulches, and soon after the soil becomes wet the moisture is evaporated quickly, leaving it in a hard-baked state. This makes it necessary to stir the soil in some way.

TO PLOW OR NOT TO PLOW

One of the much-mooted questions in regard to soil treatment is whether deep plowing is beneficial or detrimental. It is the contention of some growers that plowing of any kind is unnecessary, whether deep or shallow, and that disc cultivators will do the work of a plow as effectively and cheaper.

Many such growers are obtaining good results. There are others who firmly believe that deep plowing will give the best results, and these also are successful.

It is, however, the opinion of the writer that there are certain reasons why deep plowing will give better results than shallow plowing or discing. It should be remembered that there are but few horticultural operations recognized as the best that do not occasionally develop exceptional cases.

The greatest deficiencies in California soil are in organic matter and nitrogen. Organic plant food is added by growing cover crops or using organic fertilizers. Nitrogen is obtained by the growing of cover crops, and by the addition of other organic and chemical fertilizers.

MUCH PLANTFOOD LOST

With the methods of discing and shallow plowing that are so prevalent in our citrus groves, much of the value of the organic matter and nitrogen is lost. An analysis will show that the greatest proportion is within the upper few inches of soil, maintained as a dust mulch. With our intense heat and exposure, much of the organic matter and nitrogen is lost before the season is over. In fact, only a small part is utilized by the trees. Shallow plowing and discing will not put fertilizers down where they can be of use, but deep plowing will turn the soil over and put the organic material where it is needed. This has been definitely proven by actual soil tests.

Continued cultivation, without deep plowing, often results in the formation of a plowsole, which becomes almost impervious to water. This can be broken up, and re-formation prevented by deep plowing.

There is another very good reason why deep plowing is essential in producing good crops. Citrus trees, unlike most kinds, do not have hair roots for taking moisture from the soil, but are dependent upon matted, fibrous roots. It is, however, the terminal part of the roots which absorbs moisture, and the quantity absorbed is dependent upon the youth and succulence of these terminals. If the fibrous root system remains undisturbed, as is the case to a great extent in shallow plowing and discing, then the roots outlive their usefulness, for they are too old to feed normally.

On the other hand, deep plowing cuts those fibrous roots and stimulates the growth of a new and more efficient system. However, there is a "best season" to do this and that is while the tree is somewhat dormant. Deep plowing can be done practically either in late fall or in early spring. If no winter cover crops are grown, it is perhaps better to plow deep in the fall so that the soil will be in a better condition physically for winter.

In case there is a winter cover crop, however, the plowing should be done in the early spring, preferably by the first of March. Growers sometimes are tempted to let their cover crops grow too late in the spring in order to obtain a greater tonnage. But it is far more preferable to turn them under, even if there is not as much tonnage, for a greater amount will be saved through being buried deeper, and a new fibrous root system is grown. Late plowing disturbs the root system at a time when the tree is in active growth. When the cover crop is grown late in the season, it is better to disc it in so as not to disturb the root system.

NO SET RULE

The question often is raised as to what is the best depth for plowing. It is the opinion of the writer that there is no one best depth for all soils. The reason for this statement can be understood readily when one considers how citrus trees respond on different types of soil. In a sandy loam soil there will be a rather even distribution of roots, including fibrous roots, throughout a depth of about three feet. A loam soil will have a less even distribution, and more fibrous roots will be found near the surface. A heavy, compact soil will have most of its roots within the upper 12 or 15 inches of soil.

If deep plowing of 9 to 12 inches were practiced on all these soil types, there would be necessarily a variation in tree response. The sandy loam and the loam probably would be benefited, but undoubtedly the effect upon the heavy, compact soil would be decidedly injurious, because so much of the root system is within the upper 12 inches, that plowing to that depth would cut away such a great percentage of those roots that it would be injurious to the tree.

It is necessary therefore to use judgment with different soil types. Deep plowing on some heavy soils would be considered shallow plowing on loams and lighter types. However, probably it would be better for the heavier types if even a deeper plowing could be given, yet the beneficial effect on the soil would be counterbalanced by the injurious effect on the roots.

It is surely evident from the above statements that deep plowing is beneficial. But the unfortunate part is that too few growers really practice deep plowing. We hear much about the shortage of manures, but the need for manures would be cut down enormously if the organic fertilizer were conserved by proper plowing under

DEEP TILLAGE VS. DEEP PLOWING

By R. Lehr

[Editor's Note—The writer of this article bases his assertions upon discoveries and experiments of the Kiliefer Manufacturing Company, whose inventions in the way of chisels and sub-soilers have revolutionized tillage methods in many sections of California. These statements are borne out by the experiences of scores of farmers and fruit growers.]

TO SUM up in a single sentence the idea of deep tillage, we will say that it "farms" the lower soils without disturbing the position of the rich top soil as in deep plowing.

We have an excellent reason for leaving the top soil on top instead of turning it under six, eight, ten or more inches below the surface. This is the fact that bacteria which give soil its life thrive only in the few top inches of surface soil. These bacteria, we might say, comprise the "yeast" in land and act upon the soil elements, continually breaking down these elements into soluble food.

Turn these bacteria under with a deep furrow and they perish. A large percentage also are lost by turning up plow furrows and exposing them to the sunlight.

You have heard it said that many fields have been plowed deeply but failed to raise a crop for two or three years after. This is due to the fact that the soil has been set back by the destruction of beneficial bacteria of the top soil with its humus and the organic matter which provide a harbor and feeding ground for them.

These bacteria, among other things, assist in the collection of nitrogen in the soil, but beyond a doubt their most important function is their assistance in freeing a great percentage of the carbonic acid gas produced in soils and which in turn is absorbed by the breathing elements in the leaves of all vegetation.

VALUE OF CARBON

We know that carbon fertilization is of even greater importance than nitrogen fertilization, since carbon comprises almost half the "building material" of plants if water is removed from their structure.

If you had two seeds, the last in the world—of wheat, for instance—how would you treat them to restore the world's supply of seed wheat to mankind?

Would you go into a field and dig down six, eight or twelve inches and bring up barren, deep soil, closely packed, in which to germinate those last two seeds?

Or would you take handfuls of well pulverized top soil containing its valuable bacteria and mold of decayed vegetable matter (or humus), rich in food for plant roots, porous, and having the benefit of the sun's warmth and the circulation of air with its life-giving oxygen and nitrogen?

We know you would choose the latter method, and this is one of the important principles on which the deep tillage theory is founded. The deep soils are cultivated without deep burial of the rich top soil, reservoirs for moisture storage are opened up to make a longer growing season, and root "breathing" is improved.

This "better farming" idea, which we call DEEP TILLAGE, is increasing land values and the "earning power" of land wherever practiced, because crops are increased without exhausting the soil, land is better drained and more easily farmed, and, if deep tilled annually, can be "farmed" instead of "mined" year after year.

When a piece of iron is exposed to air and moisture, we say it "rusts." This means that oxygen in air and water acts upon it to form a soluble compound or oxide.

The same is true of soil particles. Air in soils is vitally essential for this reason, as is moisture. Particles of soil continually are breaking down and this "rust" supplies plant food to root systems. Subsoiling on this account is more effective than deep plowing for the reason that it allows the oxidation process to be carried on much deeper in the soil and permits deeper stroage of moisture, and accomplishes these without destruction of surface bacteria.

PROOF IN YIELDS

The best proof of any pudding is in the eating and it has been conclusively shown that deep tillage with the subsoiling process increases the yield to a phenomenal degree.

On the other hand, we have known of cases in which the benefits of subsoiling were entirely nullified by deep plowing immediately after and in conjunction with it. Manufacturers of deep tillage implements advocate the destruction of old plow pans and natural hard pans as explained above, and afterward a deep stirring of the surface soil by cultivators and disc harrows to preserve the moisture content of the soil without turning it upside down.

EFFECT ON FERTILIZER

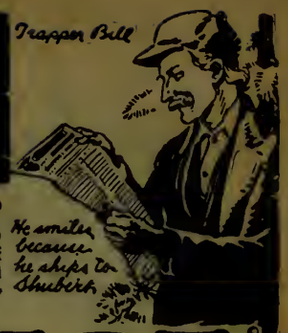
The advocates of deep plowing maintain that it enables fertilizer applied to the surface to work much deeper into the soil and to reach feed roots otherwise impoverished. However, the deep tillage system enables fertilizer to work much deeper, for a thorough cultivation of the surface soil enables the fertilizer to leach through to the deeper channels, and it should be remembered that all nitrate fertilizers are of extremely soluble nature and should not require turning under to work them deeply into the soil.

They should be carried to greater depth by water, for until they are in a moist state they are of little value to the absorption system of the plant, even though turned down to a depth of several inches by so-called deep plowing.

This Outfit Trebled Grain Yield

With this 60 H.P. tracklayer and heavy duty chisel, the Dodge Land Company of Butte County increased the average yield of grain from four and one-half to fourteen sacks per acre in one season. In many sections where the ground was particularly hard this fall, subsoiling has taken the place of plowing. By opening up the soil to a considerable depth, land owners thus have prepared their ground to absorb more late moisture.

Do You Want BIG MONEY For YOUR Furs?



Sure you do! How can you get it? That's up to you! All you have to do is ship to the right house. Scores of thousands of trappers all over North America have learned from experience that a sure way to get *big money* for furs is to ship direct to

SHUBERT

an honest, reliable, responsible, safe fur house—a house that has been satisfying fur shippers for more than thirty-eight years—a house that will always give you an honest grading, pay you the highest market price on every skin and send your returns quickly. "SHUBERT" is a mighty good house for you to do business with. You take no risk—"THE SHUBERT GUARANTEE" protects you absolutely. We want furs—QUICK—and are paying big prices, so don't wait another minute—quick action means big money for you. GIVE "SHUBERT" A TRIAL TODAY

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THE LARGEST HOUSE IN THE WORLD DEALING EXCLUSIVELY IN AMERICAN RAW FURS

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Standard for over 75 years

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No work that you farmers do is too rough for clothes made out of Stifel's Indigo Cloth.

All Overalls, Jumpers and Work Clothes made of *this* cloth last longer, wash better and keep their "looks."

See that you get it. Look for this boot shaped trade mark stamped on the back of the cloth.

Garments sold by dealers everywhere—We are makers of the cloth only.

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Indigo Dyers and Printers
Wheeling, W. Va.
260 Church St., New York, N. Y.

Rheumatism

A Remarkable Home Treatment Given by One Who Had It

In the year of 1893 I was attacked by Muscular and Sub-Acute Rheumatism. I suffered as only those who are thus afflicted know for over three years. I tried remedy after remedy, but such relief as I obtained was only temporary. Finally, I found a treatment that cured me completely and such a pitiful condition has never returned. I have given it to a number who were terribly afflicted, even bedridden, some of them seventy to eighty years old, and the results were the same as in my own case.

I want every sufferer from any form of muscular and sub-acute (swelling at the joints) rheumatism, to try the great value of my improved "Home Treatment" for its remarkable healing power. Don't send a cent; simply mail your name and address, and I will send it free to try. After you have used it, and it has proven itself to be that long looked for means of getting rid of such forms of rheumatism, you may send the price of it, One Dollar, but understand I do not want your money unless you are perfectly satisfied to send. Isn't that fair? Why suffer any longer, when relief is thus offered you free. Don't delay. Write today.

Mark H. Jackson, 41H Durston Bldg., Syracuse, N.Y.
Mr. Jackson is responsible. Above statement true.

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SQUARE DEAL TO YOU.

FREE BAIT!

For a limited time only, we offer our friends the exceptional opportunity to secure a bottle of FRIEND'S FAMOUS ANIMAL DECOY, absolutely without cost. Act quick before supply is exhausted!

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Headquarters for everything needed in the care of bees. Send for late price list and free booklet.

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PACKERS OF AIRLINE HONEY

4 LACE CURTAINS FREE

for selling only 30 packs vegetable seeds at 10c per large pack. Handsome 31-piece Blue Bird Dinner Set given according to plan in our catalog. Send quick. Send no money.

American Seed Co., Lancaster, Pa. Box M128

We Trust You

SNAPSHOTS FROM HERE AND THERE

An Egg a Day the Year Around would be almost too much to expect even of these white leghorns, but they are busily at work making records at the experiment farm of the Sperry Flour Co., near Escalon. Note the simple, yet modern and practical arrangement of the laying house.

She is a Winner! Here is Lulu Mayflower, Grand Champion fat heifer at the Chicago International Livestock Show. She was bred, fed and exhibited by the University of California. The corn belt is said to be recovering from the shock.

A Farmer Took a Vacation, and this is one of the beauty spots he visited—Tioga Pass in the wonderful Yosemite country, where the tonic air and the fragrance of the pines helped him to forget his troubles. (Copyright, M. Hinman.)

This Modern Hospital is an important part of the equipment upon an up-to-date poultry farm. Here are isolated for treatment and observation any fowls that show even slight symptoms of illness. The operating room is at the rear—a chopping block and an axe comprising the equipment.

"Um-m! Watahmillion!" These picanninies were too busy to pause very long for the picture. And judging from their sad expressions, they found the ordeal trying!

"This is Hubam, the new annual wonder clover, from an experimental field planted by the Bomberger Seed Co., Modesto. Nearly 1000 pounds of seed per acre was the reward.

A City Maid, who just can't help smiling as she revels in a garden of old-fashioned flowers at grandmother's country home. Perhaps her name is Pansy or Rose!

BOYS AND GIRLS
Their Work and Play

The Trick Pass—A Football Story By Leo Calland

CENTER, UNIVERSITY OF SOUTHERN CALIFORNIA FOOTBALL TEAM.

(CONSIDERED THE BEST CENTER ON THE PACIFIC COAST, AND HONORABLY MENTIONED BY WALTER CAMP FOR THE ALL-AMERICAN ELEVEN).

WRITTEN ESPECIALLY FOR ORCHARD AND FARM. ALL RIGHTS RESERVED.

AFTER Herb Smith had been "weeded out" from the school team because he was too light, he had sat alone on the empty bleachers every afternoon watching the practice.

From the time Coach Anderson had said, "I'm sorry, Herb, but perhaps you will be big enough next year to play against Hurley," Herb had never weakened in his determination to help Grant, his school, win their big game. He thought that if he knew more football, perhaps he could overcome his handicap and be allowed to play the following year.

With the familiar rule book in his hand he watched every play of the first team against the second. When the first team had every man in the play and could not make their yards, he saw why they failed; he feared they were not heavy enough to beat Hurley, their greatest rival.

The first team line was charging, and although they fought like tigers, they seemed too light to open the holes for their backfield men to break through. The prospects looked dark to Herb.

Hurley had played a wonderful game the year before, defeating Grant 21 to 6, and had the same men this year, while Grant had lost "Dutch" Van Duzen, their one star player. Everything pointed to a greater defeat this year.

The first team tried a "tackle-around" play, the center handing the ball to the tackle, who ran around behind him, making fifteen yards. Herb, as was his habit, looked up the rules that governed this play and found that the center could have given the ball to the tackle, without snapping it back between his legs.

After practice was over, Herb wandered into the training quarters and found Coach Anderson just stepping out of a cold shower. Every boy idolized the coach, so it was not without the usual boyish embarrassment that Herb said, "Could I talk to you for a few minutes after you have finished dressing? It's something important."

"Certainly. Come into the office in about five minutes."

THE big game was on with the score 6 to 0 in favor of Hurley. Herb Smith's fears about the Grant line were well founded, yet it was only the fighting spirit that refused to be beaten that held the powerful Hurley eleven to one hard-fought touchdown through the first three quarters.

The trick play had not been used, and Herb believed it unlikely that Grant could use it, now that the time was getting short. Grant had the ball on its own 45-yard line, but was forced to kick on the fourth down. The ball soared high into the air and Jordan, the speedy little right end, was down under it like a rabbit, evading the Hurley half.

The smooth machine of the rival school failed to work; two of the Hurley backs shouted the ball was theirs, and one gave way to the other only after it was too late to prevent a fumble. Always well coached, the Grant end never lost sight of the ball, recovering it the moment it hit the ground. It was Grant's ball on Hurley's 25-yard line.

How the Grant stands vibrated with the cheering! Hats and caps flew into the air like drops of water on a giant fly wheel.

WITH only two minutes to play, Grant did not lose a second. The team lined up and took the spread formation. Would the quarterback call the signal for the trick play? Herb thought. Brown, the quarter, could be relied upon to use good judgment. Grant had tried a forward pass from the same formation earlier in the game, which had been intercepted.

With a quick survey of the opponents in regular defense, the quarter called for a pass, relying upon the suddenness of the attack to be successful. He was not mistaken, for the Hurley backfield were playing in close, allowing the Grant halfback to make twenty yards.

Five yards to go and four downs to make it!

Brown would take no chance. Straight football should put the ball over. On their own goal line, the Hurley defense tightened. Twice the Grant backs failed to make an inch, and on a criss-cross the Hurley guard broke through the light line and threw the half-back for an eight-yard loss. Thirteen to go and only one down left.

Illustration drawn for ORCHARD and FARM by "Hal."

HERB'S heart was beating fast as he waited amid the shouts and laughter of the boys in the locker room for the minutes to pass.

In the plain unplastered office, the coach greeted him with the usual, "How are you?" and "By the way, Herb, I like the way you watch the practice every afternoon. That's the spirit that will win for Grant. What is on your mind?"

"While looking over the rules after the first team tried that tackle around play I thought up a trick play that I would like to show you. You will know if it is worth anything or not."

"All right. Go ahead."

"After I read the rule about snapping [illegible] the ball, I thought that if we could [illegible] fake on our forward-pass spread formation to weaken Hurley's defense, the center could pass the ball in front of the [illegible] tackle, who could go for a [illegible] before they could get started. [illegible] of the play."

"[illegible] but with only two [illegible] Grant [illegible] Hurley, we [illegible] to work it up."

Quarterback Brown called for the spread formation again. A Hurley back shouted, "Pass! Look out for a pass." Their defense spread out for a forward pass, with only four men opposite the center of the Grant line to rush the passer, and with only the Hurley center playing safety in front of the goal posts.

Herb felt his heart was in his throat. If they would only try the play, they could put the ball over in the remaining moments. What if the big Hurley center "messed" the tackle and the play failed? Herb did not want to think of this possible result.

With the signal, the Grant center scooped the ball with his left hand into the stomach of the tackle. His over-anxious opponent passed him to rush the passer, while the Grant guard and center took out their men. The surprised Hurley center, waiting for the expected pass, was the only man between the runner and the goal posts. Four yards from the goal posts, he grasped his man. But with his momentum the Grant player struggled on, stumbling like a plow horse over a rough piece of ground.

On and on he fought before he fell with the ball.

The referee blew his shrill whistle. "Touchdown!"

THE silent stands became a roaring mob. Old grads let out Indian whoops, while mothers waved their handkerchiefs in the air.

Brown kicked goal. The time keeper's whistle blew and the game was over.

Score: Grant, 7; Hurley, 6.

That evening the boys of Grant celebrated their victory around the big bonfire, and Coach Anderson was cheered.

"Speech, speech," were the cries.

"All right, boys, we all like to talk when we win, yet we would not be around this fire tonight if it were not for two things: The fighting spirit of Grant and the loyalty of one of the smallest boys in her halls."

The coach then told in simple words the story of how Herb had tried to play, and being too small, had sat on the cold boards of the stands and devised the play that won.

He concluded, "Herb Smith is the real hero of the day. He won for Grant."

"Rah! rah! rah!" Rah! rah! rah! Smith!" Little Herb, hurrying towards his dormitory, heard the mighty shout with singing heart.

Luther Burbank Says:—

"Marl Makes Humus Available for Plant Food"

The Highest Soil and Plant Authority of All Time Endorses Marl for Improvement of the Soil

After examining samples of BERNAL MARL, both in its natural and powdered form, from the great shell deposit near San Jose, Mr. Burbank authorized the following statement concerning it:

"Marl has been used for hundreds of years for soil improvement, its principal value being its lime content. Marl has a tendency to make heavy soils friable, and sweetens soils that are acid. Marl makes humus available for plant food. The profit in its use will depend upon the condition of the soil, the value of the crop and the cost of the marl."

BERNAL MARL is a highly decomposed, air-slaked lime of shell origin. As it goes to the farmer it is a fine, rich powder that will be carried into the soil by this winter's rains.

BERNAL MARL WILL ENABLE THE SOIL TO UTILIZE THE NATURAL AND APPLIED FERTILIZING ELEMENTS, RELEASING THE HUMUS FOR PLANT FOOD. ITS ACTION WILL BE IMMEDIATE AND IT WILL RETURN PROFIT ON ITS COST IN THIS SEASON'S CROP.

BERNAL MARL will increase your yield, the farmer's only remedy for falling prices.

"Large areas of non-productive land in New Jersey were restored to fertility by the use of marl. . . ." Statement by Luther Burbank

The use of BERNAL MARL will restore the fertility of large areas of California land that have been successively cropped without liming.

Apply BERNAL MARL now, in order to take advantage of this winter's rains.

BERNAL MARL FERTILIZER CO.

Lloyd W. Stetson, Sales Director

207 S. 1st St., San Jose, Calif.

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Bernal Marl Fertilizer Co.:
Send more information and quote prices on Bernal Marl.

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You may become a member of the Star Winner Club like dozens of other boys who are making good money in commissions in addition to receiving the official Boy Scout knife and a year's subscription to the American Boy Magazine free, for getting 10 subscribtions to ORCHARD and FARM. Begin your profits now. Write

STAR WINNER CLUB, ORCHARD and FARM, Los Angeles, Cal.

HELPFUL HINTS for THE HOUSEWIFE

Edited by Isabel Sinclair

If the sun were always shining,
And the sky were always blue,
Then the grass would miss the raindrops
And the flowers miss the dew.
If the night ne'er brought the darkness,
Then the stars would never shine.
Don't you think that it is better
Light and darkness to combine?
—Arthur J. Burdick.

DEAR FRIENDS:

With the dawning of each New Year we all decide upon certain resolutions which we fully expect to carry out through the coming months.

Other things being equal, plans help to make the work, whatever its nature, more effective, and it is surprising how much more can be accomplished in a certain length of time, when tasks are done on a schedule basis.

Sometimes, though, resolutions turn out to be irresolutions, especially as in "Johnnie's" case, when he firmly resolves the first of January not to "play hookey" from school or succumb to the spring lure of the "swimming hole." Maybe Dorothy resolves to "cut out" slang, and father decides not to smoke any more. But whatever the nature of the resolution, one of the best brands I know of for the housewife, is to systematize her work for the coming year in such a way that she can enjoy life more; have more time for the things which take some of the hard edges off the everyday routine. Why not try it?

With best wishes for the coming year, Sincerely,

Isabel Sinclair.

Dyeing Garments Successfully

IF possible, garments should be ripped apart before dyeing. Linings and trimmings should be removed, and all folds, tucks and hems let out. Materials should be weighed, then washed well in soap and water, for grease and dust spots are not covered up by dyeing. Use lukewarm water for wool or silk. Rinse well. Dissolve the dyestuff thoroughly in a clean enameled basin, mixing first with only a small amount of hot water then gradually adding more water. Strain part of the dye through two thicknesses of cheesecloth into a clean dye kettle of enamel or agate, if possible, containing three gallons of cold water for every pound of material. Add more dye gradually. Care should be exercised not to start with too strong a dye bath, as it is difficult to lighten the color once fixed.

SALT IMPROVES THE DYE

For cotton material, add salt equal in weight to one-fifth of the weight of the material to be dyed. For wool or silk dye add the same proportion of salt and at least two tablespoons of strained vinegar for every pound of material. The acid breaks up the dye so that it penetrates more readily into the material. Stir constantly. Test the shade of the dye on a sample of the same material, remembering that it will be darker when wet.

Before immersing the material stir the cold dye bath thoroughly and wet the goods, otherwise it will dye unevenly. Keep the material in motion in the dye bath to prevent spots, streaks, and heat wrinkles, which cannot be pressed out. Gradually heat the kettle to the boiling point, and boil the material at least one-half hour. Boiling deepens the shade.

Dye penetrates more quickly into soft materials than into those made of hard, twisted threads. If the material is allowed to cool in the dye kettle the shade will be deeper and the dye more fast.

RINSING IMPORTANT

Rinse thoroughly in cold water until the water remains clear. This prevents cracking. Use two old broomsticks with rounded ends to press out the dye from the pieces. Use a wringer (which should be washed thoroughly afterwards) for larger garments. Shake the material until nearly dry and hang in the shade.

The Home is the Hub of the Universe

Rich Soups May Replace Meat

DURING the winter months, substantial soups are relished by nearly everyone, and black bean soup, split pea soup, cream of bean or pea and puree of beans and tomatoes are delicious, inexpensive and easy to make. Owing to their food value, they may form the chief dish of a meal.

Soak and cook until very soft, a pint of peas or beans as usual, using about two quarts of water. Then put through a sieve, and they will be ready to be made into all kinds of soups by adding the various seasonings, water and milk or stock sufficient to make two quarts. A little flour should be added to prevent the thick part from settling to the bottom. Mix thoroughly two tablespoons fat with two tablespoons flour, add a little of the hot soup and stir until smooth, then add to the remaining soup, stirring to prevent lumping, and cook for about 10 minutes.

BLACK BEAN OR SPLIT PEA SOUP

To the pulp from one pint of beans or peas, add enough water or stock to make two quarts. Thicken with flour as directed, and season with salt and pepper. The juice of a lemon and one-half teaspoon mustard adds to the flavor.

CREAM OF BEAN OR PEA SOUP

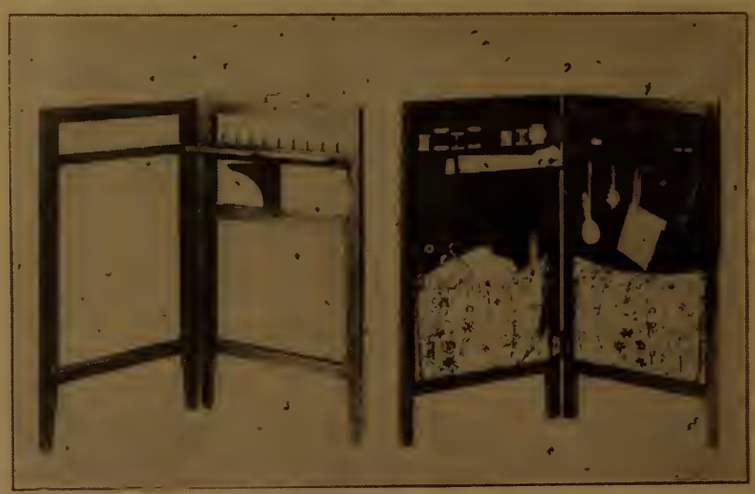
To the cooked and mashed pulp, add sufficient milk to make two quarts of soup. Season and thicken with flour.

PUREE OR PORRIDGE OF BEANS AND TOMATOES

Tomatoes may be used instead of milk. Add a cup of canned tomatoes or three medium-sized tomatoes, which have been cooked for 10 minutes and put through a sieve. If the porridge is too thick, add water or stock; season and add flour as directed.

BEAN OR PEA SOUP WITH MEAT

Soak peas or beans as usual and cook with the meat in 4 quarts of water. Use a soup or ham bone, or one-half pound of salt pork or smoked meat, and cook until the beans are soft. Remove the meat and put soup through a sieve. Season and thicken. The cooked meat cut in small pieces may be added to the soup, and an onion, several stalks of celery or soup herbs may be added also, if desired.



A Home Accessory Easily Made

This sewing cabinet is made in the form of a screen and has a place for everything required by the seamstress. Almost any handy man, or even the small boy who wants to do something for mother, could make this simple but useful cabinet. The spools are carried on nails driven through the shelf as shown. The big pockets provide ample space for materials. The two parts are hinged together so that the cabinet may be folded and laid out of the way. Here utility and beauty are combined.

Music in the Home

IMAGINE a dancing party without music! Then again, imagine a home without music, especially where there are children. Children naturally love music. They are healthier and happier when they can go to sleep or wake up singing, and when their love of music can be directed in the right channels so that they can appreciate good music when they hear it, their education is being broadened just that much more.

It is interesting to know that the ancient Greeks gave music first place in the education of little children and modern educators are doing the same.

In nearly every family there is usually one member who plays or sings, and how fine it is when one can play some simple songs for the others to sing. Even if the home lacks a trained musician, through the medium of the phonograph or reproducing piano, every one can hear and become acquainted with the best talent the world has to offer. And truly music is the universal language which every one can and should understand.

Banana Whip

HERE is a delicious "company" dessert which is extremely easy to make. Press six ripe bananas through a fine sieve, add two tablespoonfuls of lemon juice, two tablespoonfuls sugar and one-half cupful of finely chopped walnut meats. Chill thoroughly and serve in sherbet cups garnished with whipped cream. To vary flavor add one teaspoonful of finely chopped mint to the bananas before chilling them.

Biscuit Cutter Has New Uses

NO SPECIAL directions are needed to guide the cook in using this simple little tool in new and varied ways in her cooking. It is especially handy in combining shortening with flour when making pie crusts. The fat is added to the sifted flour and salt and the two are chopped together thoroughly, depending upon the quality of pie crust desired. Then the water is added and the biscuit cutter used again to combine the water with the fat and flour mixture.

Following are other possibilities for its use:

To mix fat and flour for baking powder biscuits.

To chop fruit when it is to be used on shortcake, in making jelly or jam, or as sauce for ice cream.

To chop cold boiled potatoes for hash or salad.

Joy for the Cook

THE old copper, brass and pewter kettles that were so dear to our grandmother's heart are picturesque and decorative, but who would not be proud of a row of shining aluminum pots and pans? Aluminum seldom will spring a leak or chip, and it is so durable that, with the proper care, it can be handed down from generation to generation.

It is wonderfully light weight and foods do not scorch readily, and then, too, it holds heat for a long time.

The aluminum griddles and skillets are a joy, for very little if any grease is required when frying. And it is unnecessary to describe the hot cakes that can be made on such a griddle.

Aluminum discolors slightly when it comes in contact with alkali, but the kettle will become as bright as new when rhubarb, cherries or tomatoes are cooked in it. Steel wool or whiting moistened with alcohol will clean them easily.

Little Helps

A good silver polish is simply sour milk.

Good music in the home will contribute much toward a contented and happy farm life.

Always arrange rubber boots so they will dry out well before being worn. A little care will make them last a great deal longer.

Rub butter, shortening or cooking oil over the skins of potatoes before they are baked. This makes the skins soft and palatable so they may be eaten.

Lessen the number of dust-collecting places, such as unnecessary cupboards, grooved and carved woodwork, floors with cracks, rough-finished walls, elaborately carved and upholstered furniture, superfluous draperies and bric-a-brac.

Save all the cleaned burned matches, lollypop sticks and meat skewers in a box, as they provide a never-failing source of amusement for children. The stick pictures that can be made' Houses and barns, fences and ladders, beds, chairs and tables can be formed by the little hands. Even a park can be laid out with trees, benches and flower beds; or a camp with rows of tents and soldiers marching in line.

SAVES MONEY ON DRESS PATTERNS

"I like your dress patterns. They are as good as those I have bought for 25 cents to 40 cents."—Mrs. Marian Fike, Fresno.

Note—Compare these patterns, as to price and style, with those obtainable elsewhere!

PRETTY COSTUMES
Selected by Isabel Sinclair

These costumes are simple and can be made readily by the home dressmaker from the instructions provided. Send 15 cents in silver or stamps for each pattern desired. Address Pattern Department, Orchard and Farm, 1111 South Broadway, Los Angeles. Give full name and address.

3822-3795-3838—A Good Utility Costume
The "Knickers and Blouse" 3822 cut in 7 sizes: 34, 36, 38, 40, 42, 44 and 46 inches bust measure. Skirt 3795 cut in 7 sizes: 24, 26, 28, 30, 32, 34 and 36 inches waist measure. The jacket 3838 cut in 7 sizes: 34, 36, 38, 40, 42, 44 and 46 inches bust measure. To make this suit for a medium size will require 5 yards of 44-inch material for the skirt and jacket. The blouse will require 2¼ yards and the knickers 2⅝ yards of 36-inch material. Three separate patterns, 15 cents for each pattern.

2186—Infant's Set, Consisting of Cap, Sack, Night Gown and Dress
Cut in one size: For the dress of flouncing it will require 1¾ yards of 36-inch material with 1¼ yards of plain material for yoke and sleeves. Of nainsook or lawn 36 inches wide it will require 2¼ yards. The gown will require 2½ yards of 24 or 27-inch material. The cap ½ yard of 18-inch material. The sack requires ⅞ yard of 27-inch material. Price 15 cents.

3830—Girl's Dress
Cut in 4 sizes. 4, 6, 8 and 10 years. A 6-year size requires 2¾ yards of 36-inch material. Price 15 cents.

3837—Lady's Dress
Cut in 7 sizes: 34, 36, 38, 40, 42, 44 and 46 inches bust measure. To make the dress for a size 38 bust measure will require 4¼ yards of 40-inch material. Price 15 cents.

3026—Girl's Gymnasium Suit
Cut in 5 sizes: 8, 10, 12, 14 and 16 years. It requires 3¾ yards of 27-inch material for the blouse and 3⅜ yards for the bloomers for a 12-year size. Price 15 cents.

3832—Girl's Dress
Cut in 4 sizes 8, 10, 12 and 14 years. A 12-year size will require 2⅞ yards of material 36 inches wide. Price 15 cents.

3810—Lady's Dress
Cut in 6 sizes. 34, 36, 38, 40, 42 and 44 inches bust measure. It will require 2⅜ yards of 27-inch material for the guimpe, 4¼ yards for the dress for a medium size. Width at the foot is 2 yards. Price 15 cents.

3827—Boy's Suit
Cut in 4 sizes: 2, 4, 6 and 8 years. A 4-year size requires 1¾ yards of 27-inch material for the blouse and 1⅛ yards for the trousers. Price 15 cents.

3578—An "Easy to Make" Apron
Cut in 4 sizes: Small, 34-36; medium, 38-40; large, 42-44; extra large, 46-48 inches bust measure. A medium size will require 4⅝ yards of 27-inch material. Price 15 cents.

CATALOG NOTICE
Send 15 cents in silver or stamps for our up-to-date fall and winter 1921-1922 catalog, containing over 500 designs of ladies' misses' and children's patterns, a concise and comprehensive article on dressmaking; also "Some Points for the Needle," illustrating 30 of the various simple stitches. All valuable hints to the home dressmaker.

Use Coupon in Ordering Patterns

Herewith find.....cents, for which send me the following patterns:

Pattern No. .....Size.....

Pattern No. .....Size.....

Pattern No. .....Size.....

Be sure to give number and size. Send orders for patterns to ORCHARD and FARM, 1111 South Broadway, Los Angeles. Be sure to sign your name and address below.

Name .....

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Address .....

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Make no mistake! Nothing can take the place of Ghirardelli's Ground Chocolate—at your table or on your dealer's shelves. Because Ghirardelli's fills a daily household need—and fulfills *every* essential of food and beverage.

Ask for Ghirardelli's Ground Chocolate at the store where you do your trading. Never sold in bulk but in cans only. In this way Ghirardelli's retains its flavor and strength—the two most important elements of good chocolate.

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Ground Chocolate

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American Fruit Grower, $1.00 a year
ORCHARD and FARM, $1.00 a year
Both for One Year, $1.00

Save $1.15
Mention Club No. 16
American Magazine, $2.50 a year
ORCHARD and FARM, $1.00 a year
Both for One Year, $2.35

Save $0.85
Mention Club No. 17
Woman's World, $0.50 a year
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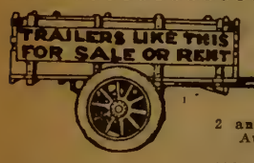

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CORY THORNLESS BLACKBERRY, 12 extra large plants, $2.75 postpaid. Satisfaction guaranteed. Illustrated price list. Write Chas. E. Mortensen, Lodi, Cal.

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All breeds
Guaranteed Stock
Raised Right
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TOBACCO—1919 Leaf. Select chewing, 3 pounds, $1; 10, $3; chewing and smoking, 10, $2.50; smoking best, 10, $2.00; regular, $1.50; fifty, $6.00. Guaranteed. Producers' Distributors, Murray, Ky.

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Have your Kodak finishing done by experts. Mail your negatives to
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SEND YOUR favorite negative and 40c for 8x10 enlargement. Prints, any size, 4c each. Wagar, Ukiah, Cal., Dept. A.

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MARRY WEALTH AND BEAUTY. Send two 2c stamps, copy "Masterkey." P. O. Box 1585, Denver, Colo.

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WANTED—SALESMEN WHO CAN SELL high grade, dependable nursery stock; exclusive territory, outfit furnished and cash advanced weekly; commission basis. Address Albany Nurseries, Inc., Albany, Ore.

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FOR SALE—In the most even climate in the State, rich land with water, ready for crop, on very easy terms. We are now harvesting Green Peas, Beans, Green Peppers, Italian Squash, etc., and getting returns up to $500.00 an acre. We also grow Limes, Avocados, Oranges, Lemons, Grape Fruit, Figs, Grapes, etc. Better locate at Carlsbad soon.
SOUTH COAST LAND CO.,
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WANTED—Walnuts, almonds, dried fruits and honey. Mail samples and price expected. W. A. Collins Company, Box 397, Santa Ana, Cal.

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SPECIAL—Weanlings sired by a son of King Orion Jr., who was second prize winner at the National Swine Show, 1919, and grand champion, San Francisco Land Show, 1919. H. E. BOUDIER, Napa, Cal.

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PETALUMA HATCHERY, established 190_ by L. W. Clark. Chicks every Monday and Thursday. White and Brown Leghorns from heavy laying free range stock. We positively guarantee safe arrival and full count of good, strong chicks and no questions asked. Send for prices and terms. L. W. CLARK, Petaluma, Cal. Box 158.

BROWN and White Leghorn baby chicks and Rhode Island Reds from carefully selected, heavy laying stock. Safe arrival of full count, live, strong chicks guaranteed. Order early. Write for special prices for January and February. Anderson's Hatchery, Modesto, Cal.

BOOK YOUR ORDERS FOR BABY CHICKS NOW. JANUARY DELIVERY ROCKS, REDS AND S. C. WHITE LEGHORNS. ALL HATCHED FROM OUR OWN STOCK MATURE BIRDS FOR SALE. E. A. FISCHER POULTRY RANCH, BELLVERNON AND EUCLID AVE., COMPTON, CAL.

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THAT are hatched right from our heavy laying strain of Ferris and Hollywood Farm White Leghorns, also Brown Leghorns and Barred Rocks. Our prices are right. OAK KNOLL POULTRY RANCH, T. E. Blake, Prop., Santa Cruz, Cal.

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WHITE LEGHORN [illegible] from Petaluma's heaviest producing stock. We guarantee safe arrival. Literature on request.
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S. C. WHITE LEGHORN [illegible] from our own Bred-to-lay stock. Now booking for January to June delivery. Breeding Cockerels for sale. Model Poultry Farm, W. C. Smith, Prop., Corning, Cal.

ANCONAS. Our sixth year. Cockerels, single birds, $3.50 and $5.00. Good supply of pep. Satisfaction guaranteed. A. S. WILKINSON, Winton, Calif.

Farmers' Classified Market Place

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Hatching each Monday and Wednesday. Barred Rocks, Rhode Island Red and White Leghorn pullets. Prices start at $1.00 each. Send your order now for fall chicks. Price list now ready. Complete line of poultry supplies and remedies. All kinds of puppies, kittens, birds and pet stock.

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FANCIERS' EXCHANGE

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1922 MISSION HATCHERY 1922

Early chicks are the ones that pay first and best. Our special letter will tell why we think so. Write for it and particulars of our White, Brown Leghorns, Black Minorcas, R. I. Reds, White and Barred Rocks. Our matings are pure bred, heavy laying strains, quality good, service good; reasonable prices. Write your needs and see if we cannot get together.

MISSION HATCHERY,
Box 7, Campbell, Cal.

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PLACE orders now, all breeds baby chicks. Our pure bred stock not to be excelled. Spring pullets in demand. We have only about 10,000 of our famous Tom Barron White Leghorn Pullets for spring delivery. Get orders in early. We have all makes incubators, brooders and stoves. Write for our 1922 general catalogue.

C. E. HILL CO.,
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WHITE Leghorn Hatching eggs and chicks, stock trapnested 18 years for vitality, production and persistency, circular free. Bonnie [illegible] Farm, Burbank, Cal

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[illegible] GROW Fall chicks, Rhode Island Reds, B. Rocks, White and Brown Leghorns and Anconas. E. W. Ohlen, [illegible]

[illegible] CHICKS—Thoroughbred White Leghorns [illegible] No defects or weak ones [illegible] Schellville Hatchery, Schellville, [illegible], Cal.

POULTRY

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When you buy baby chicks the big thing for you to remember is QUALITY, in both the chick itself and the parent stock. By investigating you will find that our chicks are in a class by themselves; for we have absolutely the best equipment obtainable to produce them and very high-class stock from which we get our eggs, and then, too, we know how to handle and deliver chicks. We are hatching every week, White Leghorns and Anconas that will lay. R. I. Reds and Barred Rocks that are well bred and will produce. Send for our circular and prices and order immediately for 1922 delivery.

Orange County Hatchery

Santa Ana, Calif.

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OLD MISSION STRAIN RHODE ISLAND REDS. Noted for quality, vitality, fecundity. Winners at highest honors at recent shows. Grand matings this season. A setting of eggs will improve your flock. Descriptive booklet free. ALBERT SLY, 1642 (D) Middleton Place, Los Angeles, Cal.

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BARRED PLYMOUTH ROCKS—"Nothing better in poultry." Wonderful layers. Hens and pullets for sale. Also choice cockerels that will improve your flock. Now booking orders. Have made a specialty of Barred Rocks for over twenty years; "that's why" our birds win at all leading shows. Catalog free. Vodden's Rockery, Los Gatos, Cal.

HIGHEST prices paid for Hens, Fryers, Roasters, Ducks, Geese, Turkeys and Rabbits. Write or wire us for prices. Haber Poultry and Egg Market, 654 South San Pedro street, Los Angeles, Cal.

COCKERELS—Purebred Silver Laced Wyandottes and White Rocks, $5.00 apiece. Write Mrs. R. C. Mercer, Chilcoot, Plumas County, Cal.

WHITE Leghorn Baby Chicks. Trapnested stock. Booking orders for now and future delivery. Pebbleside Poultry Farm, Sunnyvale, Cal.

BROWN LEGHORN EGGS—Superior stock. Write for circular. Dunroven Farm, Route 2, Santa Cruz, Cal.

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GIANT BRONZE TURKEYS

Large turkeys can be raised at practically same cost as small ones. It is in the strain. One of our toms will give you five more pounds of meat to market in all his get the first year, besides vitality and beauty.

GOLD NUGGET STRAIN
J. Will Blackman, Originator

Won at California's two greatest shows, Gold Special Sweepstakes for best turkeys, California State Fair, 1920, against 66 of the State's best turkeys, also every 1st, 2nd and 3rd prize and Gold Special Sweepstakes at Los Angeles Livestock Show of 1920.

AN UNEQUALED RECORD

Toms and hens for sale; a few high class exhibition toms to win in any show or head any flock. Book orders early for December and January shipment, as each year we are sold out.

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607 East Third St., Los Angeles, Cal.

TURKEYS—Purebred giant bronze, male and female stock, sired by our two famous toms, "Goldbank Boy," champion giant bronze first-prize winning cockerel at Madison Square Garden Show, New York, January 1921 and "Copper King Jr." a 36-lb. yearling son of "Copper King V.," the 38-lb. yearling that was grand champion at Madison Square Garden Show, January, 1919, both bred to choice 20-lb. hens. Eggs in season. Address Bronze King Mountain Farm, Calistoga, Calif.

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A WILD TOM WILL PRODUCE

five to twelve more turkeys per hen.

WHY?

Because WILD BLOOD will give you fertility and big, strong, live poults instead of scrawny, weak and dead ones. Stock and eggs.

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SEVERAL VARIETIES—BRONZE, BOURbon Red, White Holland turkeys. First prize winners. White guineas, white Muscovy (quackless) ducks, drakes, $3.50; Houdan eggs. Order early. Get choicest. Parcel post 25c extra. B. Hocking, 541 E. 33rd, Los Angeles, Cal.

MAMMOTH BRONZE, PRIZE STOCK. Baby Turks from 35-lb. Toms, 20-lb. mature hens, $6—100. Fertile eggs, 40c each. Breeding Toms, $15-$20. Inglewood Poultry Co. Box 242, Inglewood, Cal.

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FOR SALE—Fine strain turkeys, wild and bronze. Blanche Dresser, Rt. C., Box 194, Tulare, Cal.

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CALDWELLS White Muscovy (Quackless) Ducks, win, weigh, lay and pay. Largest duck of the duck family. Eggs, ducklings, breeders. Free circular. Caldwell Duck Ranch, Box 274, Los Angeles, Cal.

TAXIDERMY, FUR DRESSING

FURS tanned, made up; deer heads, game trophies mounted. H. F. Lorquin, 360 Pacific Ave., Santa Cruz, Cal.

1000 EGGS IN EVERY HEN

New System of Poultry Keeping—Get Dollar A Dozen Eggs—Famous Poultryman

TELLS HOW

"The great trouble with the poultry business has always been that the laying life of a hen was too short," says Henry Trafford, International Poultry Expert and Breeder, for nearly eighteen years Editor of Poultry Success.

The average pullet lays 150 eggs. If kept the second year, she may lay 100 more. Then she goes to market. Yet, it has been scientifically established that every pullet is born or hatched with over one thousand minute egg germs in her system—and will lay them on a highly profitable basis over a period of four to six years' time if given proper care.

How to work to get 1000 eggs from every hen; how to get pullets laying early; how to make the old hens lay like pullets; how to keep up heavy egg production all through cold winter months when eggs are highest; triple egg production; make slacker hens hustle; $5.00 profit from every hen in six winter months. These and many other money making poultry secrets are contained in Mr. Trafford's "1000 EGG HEN" system of poultry raising, one copy of which will be sent absolutely free to any reader of this paper who keeps six hens or more. Eggs should go to a dollar or more a dozen this winter. This means big profit to the poultry keeper who gets the eggs. Mr. Trafford tells how, if you keep chickens and want them to make money for you, cut out this ad and send it with your name and address to Henry Trafford, Suite 1091F, Court Bldg., Binghamton, N. Y., and a free copy of "THE 1000 EGG HEN" will be sent by return mail.

Berries and Small Fruit Plants

GROWN and shipped DIRECT from my LARGE BERRY FARMS and NURSERIES here of over 100 acres. ALL SELECT plants from IMPROVED strains of RECORD PRODUCING vines.

25 Years of Practical Experience.
Send for PRICE LIST.
M. J. MONIZ, Berry Specialist,
Sebastopol, California.

SECRETS OF SUCCESS

Doing your level best.
Being kind to every one.
Hearing before judging.
Thinking before speaking.
Standing by your principles.
Stopping your ears to gossip.
Being honest in business dealings.

Questions Answered

Peach Crown Borer

SOME time ago I noticed in an issue of your magazine an article on the peach twig borer. Is it the same pest as the borer that enters body of tree at surface of ground? How can this pest be controlled?—T. J. Juday, Los Altos, Cal.

REPLY BY GEORGE P. WELDON

The peach twig borer mentioned in the article to which you refer is a different pest than the borer which enters in the crown of the tree. The latter commonly occurs in some of the northern counties of California and is an exceedingly difficult pest to control.

The crown borer tunnels beneath the bark and for a short distance into the solid wood just beneath the ground line. Much good may be accomplished by removing the larvae from their burrows in the late fall or early spring with a knife. No spraying method has been devised which will control this insect.

Treatment of the trunks of the trees for a short distance above the ground and down to a point where the roots branch from the trunks underneath the ground, with asphaltum, has been practiced quite extensively in the Santa Clara Valley. The results in many cases seem to justify this work. The asphaltum has a tendency to prevent the moths from laying their eggs on the trunks of the trees and also to prevent the little larvae from going in after they hatch.

From the description of the borer you mention I think I am safe in saying that it is the common crown borer of the peach, scientifically known as Sanninoidea opalescens.

Non-Bearing Fig

I HAVE a fig tree that drops its fruit before maturity. Does it require pollenizing with the wild (Capri) fig? Please inform me whether it is best to bud or graft the variety on it, and the best time of the year for this work. Will the fig respond to budding like other fruit trees?—A. C. Thompson, East San Diego, Cal.

REPLY BY GEORGE P. WELDON

I would suggest that either you plant a Capri fig tree near your Smyrna fig or secure each season at the proper time a few Capri figs from a nursery. Or perhaps there is some one near you from whom these could be secured.

In reply to your question regarding the budding of fig trees, this work can be done, but is more difficult with the fig than with most of our deciduous fruit trees. An expert, however, will have little difficulty in doing this work.

Pruning Young Walnut

I HAVE a budded walnut tree, nine feet high, with side shoots the entire length of the stem, which has not been pruned since planting a year ago. What should be done with it?—R. A. Marshall, Pasadena.

REPLY BY GEORGE P. WELDON

I would suggest that you select a branch at a height of about three or four feet from the ground to be developed as the lower main branch of the tree. Then select about four other branches well spaced between this branch and the top of the tree. In other words, everything should be removed except about five branches, these to be left to form the main framework.

No doubt County Horticultural Commissioner J. F. Ryan of Los Angeles, or one of his inspectors located conveniently near your place, would look at the tree and give you more specific instructions. Or you may get in touch with Robert W. Hodgson, Farm Adviser for Los Angeles County.

FARMS FOR SALE
PATENT ATTORNEYS
POULTRY
LIVESTOCK
RAZOR BLADES SHARPENED
PAINTS, VARNISHES
TAXIDERMY
MACHINERY
NURSERY STOCK
SEEDS

These are but a few of the departments in ORCHARD and FARM "Classified Market Place." Note the many bargains and opportunities in this section of ORCHARD and FARM, Pages 30 and 31.

Jones and Brown farmed neighboring acres and, as was their custom, often discussed their farming problems when they met either at town or on the road. This particular occasion they happened to meet while working in adjoining corners of their farms.

"Good morning, neighbor," was Jones' pleasant greeting. "How's everything this fine morning? Almost like spring. Peculiar fall, isn't it."

"Yes, decidedly unusual season," replied Brown. "You seem to be making good progress with your cultivating this morning. I've had just one continual round of grief. Blame these farm implements; they aren't at all satisfactory."

"Cheer up, neighbor," was his friend's good-natured interruption. "I'll admit there isn't anything more unsatisfactory on a farm than poor tools, unless it's lazy help. It's not as expensive to fire lazy help as it is to "fire" tools that don't do the work, but you'll find in the long run that it pays to use farm implements backed by years of satisfactory service."

"What line of implements are you using, Jones?"

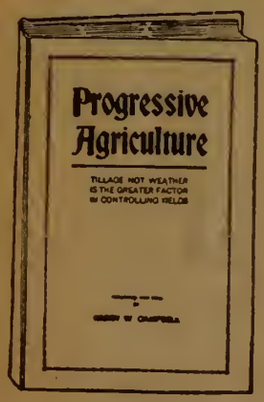
"Why the Samson Tractor Company line, of course."

"I was under the impression that the Samson Tractor Company sold Samson Model M tractors and trucks only. You say they handle farming implements?

"Yes; the famous Janesville Gold Medal line, which for 60 years has stood the test and is recognized for its superior quality and the excellence of the service it renders."

So Farmer Brown made a very thorough investigation of his neighbor's farm implements; then hiked back to his garage; clambered aboard his car and struck out for the Samson Tractor Company's dealer's place of business.—Adv.

Tillage—Not Weather—Controls Crops



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YOUR GARDEN of FLOWERS
by Helen Temple

The Growing of Palms

STRICTLY speaking, palms are not flowers or plants, yet one seldom finds a well established country home without a palm tree or two standing guard at the driveway entrance or growing somewhere upon the premises.

Helen Temple

I have seen palm trees on home grounds where they have had good care turn yellow, practically cease growth and finally die. This has been more noticeable in cases where a palm had been planted in a spot too well sheltered and watered.

AN INTERESTING CASE

Recently my attention was attracted to a fine Plumosus palm growing in a lawn. To all appearances it was dead, and its owner had contemplated removing it. However, instead of being ruthlessly dug up, it was taken out with care. The root system was found to be standing in water, the soil being very hard and sticky.

A large hole was dug and the bottom covered with a foot or more of coarse gravel topped with a layer of coarse river sand. The heavy soil was replaced by a mixture of sandy loam, leaf-mold, sand and old manure. Care was taken to set the tree firmly. After setting the soil was wet thoroughly, which settled it, allowing several more shovelfuls to be added. A slight basin was left around the tree. Twice a week the palm was irrigated thoroughly until it showed signs of new life; then half as much water was applied.

The palm now is a healthy, beautiful tree. This illustration shows the necessity of correct planting and soil conditions. Good drainage is absolutely essential. If the soil is hard and sticky, with a tendency to hold the water, do not attempt the planting of a palm without following a similar method.

PROPAGATING PALMS

Palms usually are propagated from seed. Most species of seed germinate very slowly, often requiring six months to develop a second leaf. However, a few species germinate within two weeks under ideal conditions. As soon as the seed is received it should be sown and the seed flats provided with good drainage.

The best soil mixture for propagating palms is one-half finely sifted leaf mold and one-half clean river sand, thoroughly mixed. The soil must be kept moist at all times. Plant the palm seed about one-half inch in depth and keep the soil, if possible, at a temperature of 80 degrees F.

When the seedlings have developed a second leaf, transplant to three-inch pots with a soil mixture of two-thirds clean sod and one-third old cow manure, or equal portions of sifted leaf mold, clean sand and old cow manure. The soil must be thoroughly mixed. A bit of broken crockery in the bottom of the pot with a layer of coarse grit or charcoal will provide good drainage.

SECOND TRANSPLANTING

The second transplanting need not occur until the seedlings show their fourth or fifth leaf, as the palm throws out few fibrous roots and requires little pot room. Do not disturb the little trees. They resent it and will not do well if repotted too often. The seedlings do not show their variety characteristics until a year or more of age, when they have developed a third or fourth leaf.

Although I have given careful directions for the growing of palms from seed, I do not advise the amateur gardener to do so unless he has proper propagating equipment, time and patience.

Propagating palms in the semi-tropical regions of California need not be carried on under glass. In fact, in all sections where there is no frost the seedlings, if afforded correct cultivation, make satisfactory growth out of doors.

Shrubbery and Trees a Good Investment

Without its framework of foliage, this house would be quite plain. With the shrubbery and trees, however, it is distinctive, although in harmony with its surroundings. Attractive "grounds" are an asset in more ways than one. Many a farm has brought a higher price because of its homesite

The Care of House Palms

THE value of the palm as a house plant is unlimited. They require little care and pot room, and the effect of growing palms in the house always is pleasing. The house palm must be grown in an airy room, where there is sufficient sunlight to purify the air, although direct sunlight is not necessary. Keep the soil moist, repot in fresh soil once a year and wipe the foliage occasionally with a damp cloth to free it from dust. A cloth saturated with a pure vegetable oil often is used to keep it in higher gloss.

The Kentia palm is very disease-resistant and withstands the adverse conditions of the house remarkably well. Kentia palms have been known to grow many years in one location in a house.

There are about 1000 species of

palms. The best known genera and species are the Cocos Plumosus, Cocos Australis, Chamaerops Exceisa, Phoenix Canariensis, Kentia Balmoreana, Kentia Fosteriana, Seaforthia Elegans, Washingtonia Fillfera, Washingtonia Robusta and the Erythea Aramata and Eduiis.

Palms for Decorative Purposes

PALMS form dignified borders for driveways. The variety should be determined by the planter and the locality in which it is to be grown. The Canariensis variety of the Phoenix palm is very popular in Southern California for planting singly or in groups on the lawn. Do not spoil a small garden with one of the large varieties. Plant a small palm.

The Seaforthia Elegans seldom grows to a height of more than twenty feet, thus being especially suitable for the small garden. In large grounds plant a variety of palms. The tall palms such as the Dactylifera, a variety of the Date palm, live to be very old and are remarkably hardy. Do not plant them near a small building, however, as the height of the tree causes the building to appear insignificant.

The tall, sentinel-like palms with a great depth of bare trunk and several feet of dead leaves may be beautified by planting varieties of vines, climbing ivy-leaved geraniums and sometimes ferns at the base of the tree to climb the great brown trunk. The ferns must be planted in the niches left by the stems, but the vines will take care of themselves after they are well established.

In the interior regions where the frosts are extreme, the Reclinata palm does exceptionally well. The coastal and semi-tropical districts are full of all varieties of palms. In choosing varieties the local situation in these latter regions should be considered.

PALM DISEASES

Palms are practically immune from disease of any kind. Improper drainage is the principal cause of drooping and, eventually, death. All palms should be syringed with a strong force of water occasionally to rid their foliage of dust. If the palm is infected with rust, prune severely, provide plant food, such as rotted manure spaded about the roots, and spray with Bordeaux mixture. A well known gardener of Southern California maintains that proper planting, with careful selection of the correct variety for certain localities, is the secret of success with palms.

What to Do in January

IT SEEMS that January always finds us with new plans; in fact, new resolutions of all kinds.

In the interior, where the frosts are not over, dig the hot bed and start the seedlings for early spring planting. Sow saliva, calliopsis, antirrhinum, centaurea, petunia, pansies, stocks and shasta dalsies. They will make good growth in the hot beds and be ready to transplant in early spring.

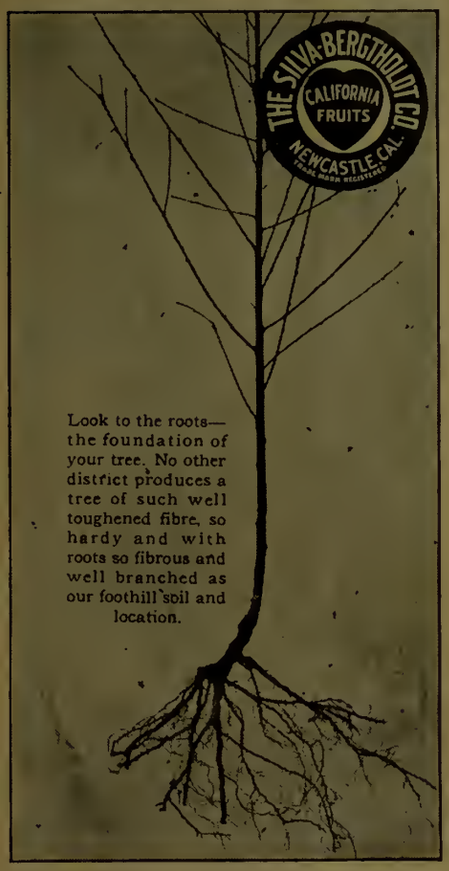
Hot beds are constructed easily where there is no snow.

Use manure for heat, with old window panes and muslin for frames. Carnations and sweet peas may be started out of doors in January, even in the interior, if the ground is not frozen. Spading in old manure during the forepart of the month, and planting the latter half, usually furnishes the best results.

SEED MAY BE SOWN

In the mild coast and semi-tropical regions, seed may be sown out of doors. Petunias, verbenas, pansies, stocks, dalsies, sweet-peas, antirrhinum, calliopsis, celosia, salvia and chrysanthemums may be sown and transplanted this month. In the severe coastal regions, follow the schedule for the interior. It is often safe to defer planting of all out-door plants ten days in the northern interior and coast regions, though they are frost-resistant. Every bulb is into the ground in all mild conditions.

Plant an Orchard



Write us for complete copies of the announcements of the "Bergtholdt Plan." This plan is a vital issue to every fruit grower—to all California. It means your success and ours in fruit growing. The responsibility for this plan is upon every individual fruit grower — boost for it.

Growing fruit is the best paying business in California.

The acid test of any business is not what it will do under favorable conditions, but what it will do under adverse conditions.

Even under this year's depreciated values, the orchardist with a block of **Prunes, Bartlett Pears, Apricots, Cherries, Raisins, Shipping Grapes, Clingstone Peaches, Drying Peaches, Fall Pears, Almonds, Shipping Peaches, Shipping Plums, Canning Plums,** and **Figs** will make more money than the grower of grain, hay, alfalfa, beans, rice or the dairyman.

Every acre of land adapted to fruit growing that you now employ in growing grain, hay and other crops, is too valuable for fruit to be employed as you are now doing.

Every year that you grow these other crops instead of planting your acreage to orchard, represents not only a dead loss in money, but more than that, one year's loss of life's opportunities.

The trees you plant now will, five or six years hence, assure your share in the profits inherent to the California fruit grower.

We offer for your planting the most complete assortment of commercial fruit varieties.

Our trees are the best that care in propagation and efficient workmanship can produce.

Our catalogue, full of accurate practical horticultural information and suggestions, and our thirty years' experience in fruit growing, and fruit marketing, are at your service for the asking.

Submit us a list of your tree wants for quotation while the varieties you desire are still available in our foothill grown stock.

Write me today.

J. E. Bergtholdt
Sec. and Mgr.

Member of the Bud Selection Association of California

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Modern Irrigation Methods

Our experts will be pleased to furnish estimates and suggestions as to the installation of irrigation systems for any character of land.

We are prepared to furnish you names of manufacturers of concrete pipe in your vicinity, equipped to manufacture pipe of the proper quality at a fair price.

Martin Iron Works
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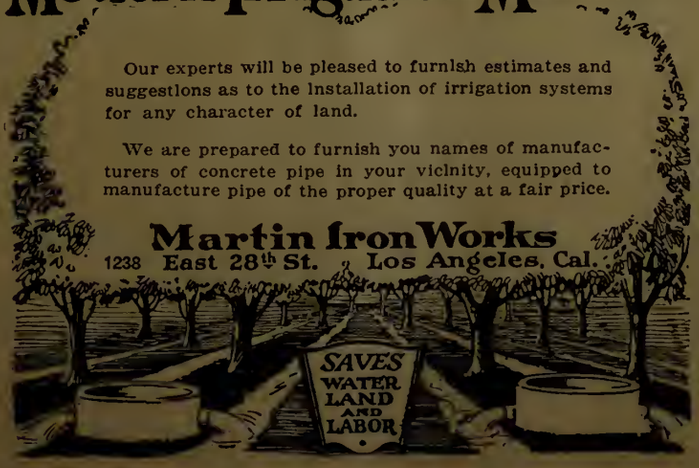

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WATER PIPE

Montague Well Casing and Riveted Steel Pipe for Surface Irrigation.

Oil and Water Tanks, Siphons, Stacks and Steel Flumes.

Write for Price List Number 4.

Montague
Pipe and Steel Co.
WELL CASING
San Francisco.

Auxiliary Foods

(Continued From Page 17)

ilar to the wheat seedling tests, were then made; and in each case the plants receiving the solution made from the silver nitrate precipitate outstripped the plants which had merely received the normal food solution. These experiments proved conclusively that bacterized peat contains substances which stimulate plant growth.

The similarity between these substances and vitamines is striking. There are, however, certain differences in their respective chemical composition, as far as chemical make-up can be determined.

Because of these differences the auxiliary food bodies in bacterized peat were called auximones (growth promoting) instead of vitamines. The important points regarding auximones is that they are present in bacterized peat, and that they stimulate plant growth in the same manner that vitamines stimulate animal growth. Tests have been made with fresh and rotted manure instead of peat; and while auximones are present and increase with the progressive decomposition of the organic content of the manure, the amount is small.

The quantity in two-year-old rotted manure did not compare at all favorably with the quantity in bacterized peat. Tests made with leguminous plants, however, showed a high auximone content, although not as great as bacterized peat.

It must not be supposed that there is anything revolutionary about the discovery of vitamines and auximones. The general principles of animal and plant nutrition still hold true. Rather, the discovery but adds to the already accumulated store of knowledge. It permits a more definite, more careful following of nature's laws instead of an accidental one. Even now the occurrence and use of these auxiliary food bodies are matters of experiment and research. Yet this much we know: without vitamines and auximones, animals and plants cannot be properly nourished.

SOURCES OF INFORMATION

MANY new and valuable bulletins are obtainable, most of them being free. Others may be obtained by remitting price mentioned. Address Division of Publications, U. S. D. A., Washington, D. C.:

FARMERS' BULLETIN

Measuring and Marketing Farm Timber 1210
Standard Varieties of Chickens... 1221
Seed Marketing Hints for the Farmer 1232
Improved Method of Making Sugar-Beet Syrup 1241
Insect and Fungous Enemies of the Grape 1220

BULLETIN

Directions for Blueberry Culture, 1921 ..... 974 5c
Control of Argentine Ant in California Citrus Orchards 966 5c

The Agricultural Experiment Station, Berkeley, Cal., has published some interesting new bulletins which may be secured free upon request:

CIRCULAR

Plant Disease and Pest Control.... 227
Some Factors of Dehydrater Efficiency 337
Walnut Culture in California 332

The following seed and nursery companies have ready for distribution comprehensive and interesting catalogs for 1922, which will be sent free upon request. Now is the time to begin planning the garden and selecting the seeds, plants, fruit trees, vines and shrubs:

Aggeler & Musser, 620 S. Spring, Los Angeles, Cal.
Armstrong Nurseries, Ontario, Cal.
Bomberger Seed Co., Modeeto, Cal.
California Nursery Co., Niles, Cal.
C. C. Morse & Co., 125 Market, San Francisco, Cal.
Elmer Bros.' Nursery, San Jose, Cal.
Fancher Creek Nurseries, Fresno, Cal.
Germain Seed Co., 560 S. Main, Los Angeles, Cal.
Kirkman Nurseries, Fresno, Cal.
Morris & Snow Seed Co., Los Angeles.
Oregon Nursery Co., Orenco, Ore.
Silva Bergtholdt Co., Newcastle, Cal.

Included among other ORCHARD and FARM advertisers sending free catalogs and booklets is the Sperry Flour Company. Two very attractive bulletins of interest to grain growers may be obtained from the Sperry Company, Stockton. Read advertisements this month for other valuable sources of free information.

Sunflowers

HIS BUSY DAY

I LOOKED at a tongue, then fitted some teeth,
And bound up a leg that was broken.
I cut off some ears and directly beneath,
I took out a heart as a token.
Next I stopped at a house (for I work very fast)
And cursed an old hen 'til I shocked her
Yet not with the criminals can I be classed,
Nor am I a dentist or a doctor.

FOR I fitted the teeth in a harrow, you see—
And the tongue was but part of a wagon.
The leg of a ladder—it happened to be.
And the "ears" on a cornstalk were saggin'
I cut the heart out of a melon to get
The seeds. And the ben?—I'd not harm 'er!
I simply was peeved that she wanted to set.
For I am an every-day farmer!

—JUSTIN NUTT.

Premonition

"What's de name ob youah hoss, Sam?"

"Blue Streak am his name, and yo' might as well lay yo' pile on him now. He am sho gonna win dis race!"

"G'long, niggah, wid yo Blue Streak. Don't ah know fast colohs kaint run!"

Little Out of Plumb!

Personally - Conducted Visitor - to-Countryside — "How artistic! How beautiful in this green setting! This seems to be a model of the famous leaning tower of Pisa."

Guide—"Naw, madam. Yer all wrong. That's jest Ben Gonnadooit's new silo."

A Japanese Letter

THE letters that drop into the correspondence hopper of a great milling concern are bound to contain an occasional gem. But for sheer naivete and picturesque expression, it would be hard to beat the following letter recently received by the Stock and Poultry Feed Department of the Sperry Company:

Stock and pullet feed department
Sperry flower company
Stockton, california
Gentlemans

I like to speak mister sperry about something very important for my Pullman Rocks Pullets.

Some time long ago I make decishun raise nice chicken best method on my place because some hard pan cannot raise artachokke promptly.

My friend young Japanese gardner who make scientific studys at Davis University tell me politely best kind chickens make Petaluma jealous is Pullman Rock. We save little money and sent post order check to Harry Osano who employed at sweeping Mr. Corliss place some how he get baby chickens and send my place in package box but not accompanied by any feed and when arrival baby chicken very hungry making much noise.

Very sorry for chicken.

I find something in feedings but perhaps I make mistake very sorry information to you lots chickens swell up very large and stop life. but I catch two remainder by careful nursery man methods and to day this two chickens now find himself two big female Pullman Rock Pullets.

What I feed now to make big egg production.

My cousin friend mister albino send me book about chickens and cannot find any thing about mister sperry experimental farm which cousin say very important industry in Escalon. please yo very kind to send me mister sperry book telling Japanese farmer best time feed Pullman chickens for much egg. my chicken lay on ground cannot make roosting for perhaps I make roosting very high for Pullman to reach with safety.

My chicken eat of any kind feed but you think some kind best what. I buy small package baby chicken mash but have difficulty with dog because this feed so nice dog eat first from plate before chicken get acquainted. now I purchase sperry sure-grow and perhaps not so good for dog if he find plenty on plate but you tell me please mister sperry.

Thank you for best way make eggs from best kind two Pullman Rocks. I thank you beforehand.

HENRY WATTAMA.
St. Helena, cal.

A Marine Spectacle

The captain of an Atlantic liner was bothered by a woman passenger who was always inquiring about the possibility of seeing a whale. A dozen times a day she besought him to have her called if one hove in sight.

"But, madam," the captain asked her rather impatiently after long suffering in silence, "why are you so eager to see a whale?"

"Captain," she answered, "my desire in life is to see a whale blubber. It must be very impressive to watch such an enormous creature cry."—Harper's Magazine.

Wanted to Save It

"My hair is falling out," admitted the timid man to the druggist's assistant. "Can you recommend something to keep it in?"

"Certainly," replied the obliging young man, who had only recently left school. "Here's a nice cardboard box."—Ex.

Absent-Minded

The two most absent-minded men on record are: The fellow who thought he had left his watch at home and then took it out to see if he had time to go back and get it; and

The man who put on his office door a card saying, "Out. Will be back in ten minutes," and on his return sat down on the stair steps to wait for himself.

The Fatal Error

"Well, Johnny, did you win the spelling match?"

"No, father, I put too many z's in scissors."

Chlorine Gas

(Continued From Page 5)

at about 20 cents a pound.

The amount of chlorine required and consequent cost, will vary with the character of the country. For Contra Costa County, in the winter and spring, we find an average charge of 3.16 lb per hole to be ample, for the average burrow of five cu. ft., this would be 16 per cent chlorine.

We have found on level ground a crew of three men easily can treat 800 holes in an eight-hour day, and about half that on hilly ground. A gang of five men with two lengths of hose will do double this amount of work in badly-infested ground. Where the holes are scattered this will be cut down, on account of the time lost in moving.

The cheapest method is to have all holes closed a few days ahead and then treat only those that have been opened. The fact that more holes can be treated in the same time on level ground is offset by the fact that the burrows in hilly ground are smaller and require less gas. On a basis of 20c for chlorine and 60c per hour labor, these costs will run from .035c to .05c per hole.

IN DRY GROUND

Chlorine gas has an additional advantage, in that it can be used during the dry season. The cost however, will be higher because the dry ground will absorb some gas and cracks will allow it to escape. But, assuming that in summer work 50 per cent of the gas were wasted, this would bring the costs up to only .06c or .09o per hole.

While it would not be desirable to treat any large area at these costs, the man who is drying fruit, or harvesting a nut crop could exterminate a colony of several hundred burrows in one day, and it would be so much quicker than the poisoning method that it would cost less in the long run.

There is nothing except the higher cost to prevent chlorine being used during the dry season. A big advantage in the use of chlorine is that one can see and smell it. If a burrow has several openings the operator may detect the odor or see the yellow gas at once and close all except the one where the gas is introduced.

[Editor's Note—While the chlorine method has not yet been officially adopted by State and County officials, ORCHARD and FARM regarding it as one of the most effective gopher destroyers ever developed, is proud to take the lead in announcing it. Upon the completion of tests, further reports from official sources will be available.]

BULLETIN BOARD

COMING—ANSWERS TO THESE IMPORTANT QUESTIONS

Has Organization Really Benefited the Walnut Industry?—The second article in the series on "Thirty Years of Co-operation" will give some "inside facts" about the powerful California Walnut Growers' Association. In the February number.

Can the Co-operative Idea Be Applied to the Marketing of Livestock?—In a telling article, written especially for ORCHARD and Farm, M. A. W. Lee, of the California Farm Bureau Exchange, gives an interesting discussion of this subject.

Two Women on Half an Acre—They have made their living for 20 years upon this tiny tract of California land. Their story affords an unusual answer to the question, "Haw many acres make a farm?

When Will a Deep Well Pay?—This and other irrigation questions will be covered by widely-known authorities soon.

What Shall I Do in February?—The next number, reaching subscribers on or before the first of February, will be brim full of seasonable suggestions—including information for stockmen, general farmers, poultry raisers, gardeners, in fact, everyone who "raises things."

How Can I Succeed With Bees?—Another valuable contribution from W. B. Dickinson, who is writing a series for ORCHARD and FARM.

These are but suggestions of the many treats the Editor has in store!

Special Note—This month we publish some of the most important and interesting advertisements of the year, a number of them announcing new inventions or improvements of intense interest to farmers. "You haven't read the magazine until you've read the ads."

May 1922 Be the Best Year You Have Ever Known!

The fastest growing Want Ad Newspaper in America

***

Whatever you may have to sell—farm lands, orchards, groves, agricultural implements, produce, automobiles, livestock—you will find that Examiner Want Ads will bring profit and satisfaction. The Examiner's circulation—a quarter of a million Sunday, 125,000 week days is the greatest morning and Sunday circulation in Southern California. It assures the advertiser that his Want Ad in The Examiner will be read by the largest audience of active buyers in the Southwest. Results to advertisers have made

EXAMINER WANT ADS

"The fastest growing Want Ad Newspaper in America."

Examiner Want Ads Bring Most Results Because Most People Read Them

PCA FED

308 EGGS in ONE YEAR

IN ONE YEAR 1900 HENS LAY **$9,378.56** for W. H. YOUNG of DOWNEY

Market Value of Eggs Laid Month by Month

W. H. YOUNG
Breeder of
S. C. WHITE LEGHORNS
BABY CHICKS AND HATCHING EGGS

P.C.A. Mills,
Los Angeles, Calif.

Downey, California, November 7 1921.

Gentlemen:

Inclosed you will find a month-by-month report on the number of eggs which I sold the past season. At the present time I have three flocks of pullets; two flocks averaging 54 per cent, and one flock averaging 66 per cent.

It is needless to say that I am much pleased with PCA Products. I have fed no other mashes from my first experience in the chicken business.

Some of my neighbors say that salesmen of other companies are claiming that I feed my hens a special mix, which would explain my high egg production. These statements are false because I have fed regular PCA out of the usual stock.

Yours very truly.

W. H. Young

2000 HENS & PULLETS	
NOV.	1,175.00
DEC.	1,100.00
JAN.	987.44
FEB.	883.24
MCH.	875.29
APR.	692.62
MAY	581.14
900 HENS	
JUNE	421.58
JULY	423.53
2100 HENS & PULLETS	
AUG.	702.14
SEPT.	631.89
OCT.	904.64
	$9,378.56

ENGLAND'S EGG RANCH
GEO. C. ENGLAND, Owner
Our Specialty—Guaranteed Trap Nested
S. C. WHITE LEGHORNS
Baby Chicks and Hatching Eggs

Inglewood, California, November 9, 1921
1921.

P.C.A. Mills,
Los Angeles, Calif.

Gentlemen:

During the past few months I have been much amazed by other salesmen reporting that I am not feeding the regular standard PCA Dry Mash, but instead have a special mix made for my flock.

I know and you know that I have been buying straight PCA Mash through Blackie Bros.

Believe you will be pleased to know that some of my pullets are laying a pen average of approximately 70 per cent.

Yours truly.

Geo. England

EVERY DEALER IS AUTHORIZED TO REFUND YOUR MONEY IF PCA FEEDS DO NOT PLEASE YOU. SEND TODAY FOR INFORMATION AND OUR POULTRY LITERATURE.

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PHONES 12076 MAIN 2935

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PCA Dry Mash
Los Angeles

Cosmopolitan

"America's Greatest Magazine"

DURING THE COMING YEAR

SERIALS: Cosmopolitan serials set a standard that only America's Greatest Magazine could hops to do. Meredith Nicholson has a new novsl just beginning called "Broken Barriers." It attacks unflinchingly the problem of the modern girl—her restlessness, her seeming wildness. Edwin Balmer's "The Breath of Scandal" and Robert Hitchens' "December Love" will continue to grow in interest.

SHORT STORIES: There will be a new series of stories by Booth Tarkington; the James Oliver Curwood series will continus; and there will be stories by Gouverneur Morris, Fannie Hurst, Leonard Merrick, Arnold Bsnnett, Roy Norton, Frederic Arnold Kummer, Royal Brown, Frank R. Adams, and a whole army of other stars.

SPECIAL FEATURES: The autobiography of Lillian Russell, beginning in ths February number, will be ons of the biggest magazine features of the year—she has known evsry one of consequence in the last 40 years, and her story is a series of personal details about thess notables. George Ade will continus with his humorous editorials; William G. Shepherd will disclose the prohibition situation; Montague Glass will sntertain you with the stories that havs mads him laugh; and Mary Roberts Rinehart will contributs travel articles.

This is only the beginning of Cosmopolitan's program for 1922—it is going to bs a splendid year.

Subscription Price $3.00 Per Year

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ORCHARD and FARM, 1111 South Broadway, Los Angeles

Capacity Counts!

BECAUSE, through our tremendous milling capacity, we can control the source of most of the ingredients used in our feeds. For example: the bran, shorts, middlings and flour that go into SURELAY are by-products of our own mills. Then there's corn. We use 10% or more in this feed—and here are our mills in the *center* of the largest corn-growing district in the State.

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And all to what purpose? To make sure that SURELAY will live up to its reputation as the most uniform, most dependable egg mash on the market. To make sure that "what's on the tag is in the bag"—always!

Always specify SURELAY-in-the-yellow-striped-sack from your dealer; and mail the coupon for our new handbook, "Makes Hens Happy." It will show you how Sperry capacity counts in bringing feed-costs down!

SURELAY

"A Sperry Product"

STOCK & POULTRY FEED DEPT. **SPERRY FLOUR CO.** 204 WEBER AVE. STOCKTON, CAL.

Please send me, without obligation, your new booklet "Makes Hens Happy"

Name _____

Address _____

ORCHARD and FARM

FEBRUARY, 1922

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Offices: Los Angeles and San Francisco

TEN CENTS

A WIRELESS TELEPHONE FOR EVERY FARM—PAGE 11

The WIZARD 4-PULL HAS SOLVED THE WORLD'S TRACTOR PROBLEM

Pulls with the fore as well as the rear wheels

BECAUSE

IT IS THE BEST BUILT TRACTOR IN THE WORLD

Correct in principle and in construction, its remarkable performance has not only measured up to our most optimistic expectations, but has amazed the most exacting.

The WIZARD is THE TRACTOR you have looked for.

When time is SO essential to the farmer, then is when he needs tractor reliability; then is when he wants Results.

THAT'S WHEN HE CAN DEPEND UPON THE WIZARD 4-PULL. It is always fit and ready for the day's work!

DEPENDABILITY—That's the WIZARD!

DUST holds no terrors for the man who uses a WIZARD—as all parts are enclosed, working in oil. There are no oil holes or grease cups.

The WIZARD is the LOWEST PRICED tractor on the market when days of work and capacity are considered.

Write us today for complete descriptive literature and sales information on Model "20-35"—Our 4-plow size.

The remarkable ability and other unusal advantages of the WIZARD make the distribution of this tractor an attractive proposition.

Would you be interested in having us send you details for the distribution of this tractor?

Send name and address.

Kroyer Motors Company

Los Angeles Harbor
San Pedro, California

OUR EDITORIAL POLICY

ORCHARD and FARM is a magazine of, by and for agricultural people. We believe that to the tiller of the soil is due the best that life affords. We believe that he is the bulwark of the Nation. We honor him as the basic producer. His problems are our problems; his triumphs our triumphs; his joys and sorrows, ours. To record his achievements and expose the duplicity of his enemies; to fight for and with him; to give him genuine help and practical information; to assist, entertain and inspire every member of his happy household—that is the policy of ORCHARD and FARM.

ORCHARD and FARM

ESTABLISHED 1888

Published Monthly by Country Life Publishing Company
1111 South Broadway, Los Angeles, California

"THE SILENT PARTNER OF THE SUCCESSFUL FARMER"

YOUR QUESTIONS ANSWERED

ORCHARD and FARM is an institution of service. Subscribers may receive, free of charge, answers to questions upon any agricultural subject. Through its large staff of specialists, and its close contact with authentic sources of information, this magazine is able and willing to serve any subscriber who requires aid or information. Be sure to write name plainly and to give complete address, including street, R. F. D., or box number.

VOL. XXXIV Entered July 16, 1917, as second class matter at the Post Office of Los Angeles, California, under act of Congress of March 3rd, 1879. Subscription price $1 a year. NO. 2

Pithy Paragraphs

Good breeding is no substitute for production.

Cutting remarks and sharp answers may sever the strongest home ties.

The loudest-crowing rooster usually is first to lose its head.

Thrift item: The quarrelsome family should save its table "scraps" for the pig-pen.

Uncle Wiseacre says he knows one agricultural college graduate who never has raised anything but hell and checks.

For a valuable, tax-free investment, we recommend Bonds of Friendship.

The man who will abuse a horse cannot be trusted with a tractor.

Our idea of wasted effort is white-washing a lime tree.

In our search for happiness, we sometimes forget the only thing that's always easy to find is trouble.

Jas. C. Kraemer

Editor.

SUBSCRIBERS SAY:

Enjoys Every Issue—"I like ORCHARD and FARM very much and can hardly wait until it arrives each month."—D. B. Shaffer, Benecia, Cal.

Best Western Farm Paper Printed—"I always read ORCHARD and FARM from cover to cover, often several times, and find many valuable and helpful items. I recommend your paper to all my friends and neighbors as the best western farm paper printed."—L. L. Lane, Lemoore, Cal.

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Is There Any Real Harm in Speculation?

"U'm'm! Think of all de luscious drum-sticks," mused Sambo, "ef de good Lawd had gib a chicken as many legs as a centipede!"

There's no harm in speculation as long as it's only mental. But it is apt to prove disastrous where money is involved—unless the speculator has extra funds to risk in gambling.

One form of speculation (or gambling) is buying goods of unknown origin or worth. ORCHARD and FARM subscribers who appreciate the value of a dollar, safeguard their investment in the necessities and pleasures of life by consulting this convenient directory of advertisements. For, after all, it is the ADVERTISED article, sold by one who has nothing to conceal, that merits and receives the continued patronage of the buying public.

And it is not only "good business" but an education as well, to keep pace with advertising developments.

A good way to reach an understanding of the value and interest of the advertising columns of ORCHARD and FARM is to look up the replies to any of the following questions that challenge your interest. Each query is answered in the advertising columns of the page listed opposite. *"You haven't read the magazine until you've read the ads!"*

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Between Ourselves

The winners of the System contest are announced on page 34. And see the household page for details of a new contest for women subscribers—another opportunity to win cash prizes!

Despite the many unusual features in this issue, we feel like apologizing for the equally-interesting things that were, of necessity, ommitted. But this means just so many more for next month—including "that" story, and it is really worth waiting for. Too bad it was crowded out this month!

Governor Stephens, in an article written for ORCHARD and FARM, page 5 of this number, explains the California Veterans' Farm and Home Purchase Acts. Those who feel that our Government has been shamefully lax in providing for those who served in the World War, may find comfort in the State aid that was made possible when the Governor signed these bills. By all means, read this important article carefully, and see that every veteran of your acquaintance is made familiar with this opportunity to acquire land or a home.

Many articles, illustrations and advertisements in this number deal with some branch of the all-important subject of Irrigation. To most of California and the Southwest, water is life! Yet our water resources are only in the early stages of development. So rapid has been the advance of irrigation engineering that every subscriber should secure the literature offered by the many irrigation advertisers this month. Study the new types of pumps! Post yourself upon this all-important topic. You may gain information and ideas worth thousands of dollars to your business!

During January ORCHARD and FARM'S force of subscription clerks have been entering new and renewal orders at the rate of nearly 100 a day. This involves an enormous amount of painstaking detail. Yet no effort is spared to make sure that every subscriber receives his copy, properly addressed and on time. This big volume of business makes it imperative that old subscribers send their renewal orders promptly. It is well to remit several weeks or months in advance of expiration date (as shown on the address label). Subscriptions so renewed are extended from date of expiration.

THE "GREEN" HAND

The Boss—"What! Haven't you even started to disc that field? What do you mean by wasting half the morning out here?"

His Nibs—"I didn't want to kill the team by making them pull that machine. Some of the wheels run in one direction and some in another. Why, it's warped all of shape!"

Did you ever stop to think that a good many situations in life involve the same principle as the disc-harrow? It may seem that two forces are pulling against each other, when, as a matter of fact, it is this very friction which accomplishes results. So it is, for example, with diversity of opinion. Sometimes out of an argument arises a new and valuable Truth. ORCHARD and FARM frequently presents both sides of mooted questions, and by giving space to new ideas and even age-old controversies, aids in the advancement of agriculture. If you would be abreast of progress agriculturally, don't miss any of the coming numbers. Send your renewal early!

HANDS ACROSS the STATE

There's more than good taste and good health in every carload of fruit that leaves our packing houses. There's a lesson: a lesson of vision, of cooperation, of achievement!

Thanks to the whole-hearted cooperation of more than 11,000 growers in California, the products packed and marketed by this association today are known and bought the nation over. So, in buying Sunsweet or Growers Brand Prunes and Apricots, you're getting more than fine fruit at a fair-square price. You're getting a cross-State message that's full of meaning.

The next time you buy prunes remember that! Remember that, of all the fruits for which the world pays tribute to California, none are more essential to your daily fare than prunes. For prunes are rich in body-building and body-regulating elements. They give your system something you can get in no other way.

Quick-to-use energy comes to you from their rich fruit sugar. Body tone comes to you from their tonic iron and other mineral and "vitamine" elements. Besides, prunes offer a laxative from Nature's own pharmacy.

Here, in California, the prune should be appreciated all the more. Living so close to the heart of this pruneland, as they do, many Californians have discovered for themselves the flavor-and-health possibilities of prunes. Those who haven't [and even those who have] will find our Recipe Packet a revelation. It is full of flavor-and-economy surprises. It belongs in every farm kitchen. We'll see that it gets in yours—if you say so. Send for it today—it's free!

Don't forget—National Prune Week February 27th to March 4th

California

PRUNE & APRICOT GROWERS-*Inc.*

PACKERS OF SUNSWEET & GROWERS *Brands*

62 Market Street, San Jose, California. A state-wide, cooperative association of 11,000 growers.

ORCHARD and FARM

VOL. XXXIV FEBRUARY, 1922 NO. 2

Farms for Fighters---How California Is Helping Her Veterans to Help Themselves

By Hon. Wm. D. Stephens

GOVERNOR OF CALIFORNIA

WRITTEN ESPECIALLY FOR ORCHARD AND FARM

MORE than 5000 preliminary applications to purchase farms and homes have been filed with the Veterans' Welfare Board of California since this body, on December 20, 1921, began active administration of the Veterans' Farm and Home Purchase Act, passed by the last Legislature.

Thus it is apparent that former service men in all sections of the State are tremendously interested in this opportunity to secure farming property through State aid. And this represents the first step towards creating a new prosperity for the State of California as well as meeting in some measure her obligation to her veterans.

It is expected that applications will be received in increasing number from now on, and possibly tripled within the next sixty days, when the board begins administration of the Veterans' Land Settlement Act, a companion statute of the act now in operation.

It is with particular pleasure that I meet the request to place before the farmers and veterans of California a brief exposition of these two soldier land measures which I had the honor to sponsor when the last Legislature was in session and which, I am convinced, are destined to exercise an unparalleled impetus to agricultural activity in all parts of the State.

It should be distinctly understood that the State of California is as greatly benefited by this legislation as the veterans themselves and that the operation of these acts will add immeasurably to the productiveness of our agricultural districts as well as provide an adequate means of livelihood for those men who defended the State and Nation in their hour of need.

SIGNIFICANCE OF ACTS

The veterans and agriculturists of California are aware that these soldier aid bills carry appropriations with which farming land and homes are to be purchased for our deserving former service men and women, but I feel that all do not entirely appreciate the significance of these measures.

The State money to be used for the purpose of rehabilitation is in no sense a gift to the veterans, but constitutes, in every instance, a bona fide LOAN, with which the man who served California is in turn served by his State. It is a means of assisting this man to re-enter civilian pursuits with the same high purposes which were his in prewar days and with the same opportunities for success and independence.

The Farm and Home Purchase Act, with an appropriation of $2,000,000, authorizes the Veterans' Welfare Board to purchase and sell to a veteran an area of agricultural land not exceeding the value of $7500, or a home valued at not more than $5000. The successful applicant is required to make an initial payment of 10 per cent of the cost of a farm or 5 per cent of the cost of a home. The balance, with interest at 5 per cent, may be amortized over a period of forty years.

Certain requirements must be complied with by the veteran who seeks the assistance of the State under this statute. First, he must prepare and file a preliminary application which will enable the Veterans' Welfare Board to determine his eligibility as a bona fide veteran, now residing in California; his stability and experience in agricultural pursuits and his fitness to carry out a contract; the reference, if any, to be given; if by reason of wounds or disability under this act, the wounded or disabled man who is in position to meet the obligations of a contract will be given first consideration.

In a great many instances veterans throughout the State have not clearly understood the requirements of the preliminary application, but have assumed that they must select a farm or home before filing the application. The board has emphasized the fact that no veteran is to select property until his preliminary application has been approved and he has been issued a selection and purchase certificate.

MANNER OF SELECTION

Having been granted such certificate, the veteran then will decide upon a farm or home and submit his choice to the board, together with an application to purchase. If satisfied with the desirability of the property, the board may purchase it and enter into a contract with the veteran at a price which will be reciprocal with the purchase price and on terms in accordance with the provisions of the statute.

LAND SETTLEMENT ACT

The Land Settlement Act, carrying an appropriation of $1,000,000, is primarily a State colonization undertaking, and provides for the purchase of large tracts of land, the subdividing and improving of the property and the reselling at cost to California veterans. A former sevice man, whose eligibility has been approved by the board, may contract with the State for a farm of value not to exceed $15,000, exclusive of improvements. The board is authorized further to erect improvements on the farm to the amount of $5000, and to make the veteran a loan of $3000 with which to purchase live stock and equipment. Under another provision of this bill, the veteran who does not wish to farm for himself is eligible for a farm laborer's allotment valued at not more than $1000, and may secure improvements on the land amounting to $1500.

FORTY YEARS TO PAY

This act allows the veteran forty years in which to complete payment on unimproved farm land.

The amount due the board for improvements shall be paid over a period of not more than twenty years. Loans for the necessary farm equipment shall be repaid in five years. An interest of 5 per cent attaches to the sums due.

The colonization plan appears to have met with unqualified favor on the part of the veterans, and, while the measure is not yet in active operation, the board has been overwhelmed with requests for information regarding its provisions. The bill is designed to aid the veteran who is a conscientious worker, but who has insufficient funds to secure a farm by any other means.

LAND TO BE PURCHASED

Colonies of veterans who understand thoroughly the value of co-operation and earnest effort, undoubtedly will prosper. The board is contemplating the purchase of a large tract of land which will constitute the first veterans' land settlement project under the act. The subdivision of this area and the erection on it of modern improvements of every character will follow.

In order that the interests of the former service man may be entirely safeguarded and that he may enter upon agricultural pursuits with every opportunity for success, the terms of contract between the State and veteran purposely have been made lenient in both the acts I have outlined. To this end, in fact, the board is permitted to postpone the initial payment or any subsequent payments in the case of a veteran who seeks to fulfill his agreement faithfully, but who, through adverse circumstances, momentarily is unable to meet his obligations. These bills have been enacted to aid the veteran, and not to place upon him a burden greater than he can bear.

BENEFIT TO STATE

It is not difficult, I think, to discern the widespread benefits of this legislation to our former service men and to the State. Their administration means that areas throughout California will soon be subdivided and placed under cultivation for the first time, and numerous tracts of our fertile valley lands in a few years will have doubled their present productiveness. I am proud that my signature made these bills effective, for I feel sincerely that statutes of this character serve the interests of California in a two-fold manner, assuring rehabilitation to our veterans and extensive growth to agricultural operations.

There is one other bill upon which, I may say, the two measures I have discussed are hinged and which is vitally important to land settlement by our veterans. I refer to the Veterans' Welfare Bond Act of 1921, which authorizes a $10,000,000 bond issue to provide funds with which the Veterans' Welfare Board may continue to administer the rehabilitation program. This act will be submitted to the people at the November election of this year.

APPROPRIATIONS INSUFFICIENT

The appropriations of $2,000,000 in the case of the Farm and Home Purchase Act and $1,000,000 in the case of the Land Settlement Act are not nearly sufficient to meet the demands of our fighting men, eager to engage in the pursuits of peace on California soil. These appropriations were passed, in fact, solely with the desire that the work of rehabilitation might be well

(Continued on Page 17)

Irrigation Development

By Samuel Fortier

ASSOCIATE CHIEF, DIVISION OF AGRICULTURAL ENGINEERING, BUREAU OF PUBLIC ROADS, U. S. DEPARTMENT OF AGRICULTURE

STATE, GOVERNMENT AND PRIVATE DEVELOPMENT OF WATER RESOURCES

AS THE writer, in ascending the trail of a canyon, frequently halts to look back over the path he has followed, observing with keen interest the surrounding landscape and trying to catch a glimpse of some distant peak still far above him, in like manner would he ask the reader to glance hurriedly over the irrigation development of the past and consider briefly the achievements of the present, in order to secure a clearer view of those greater achievements which will come with future years.

Irrigation in the United States by the Anglo-Saxon race dates back to 1847. It was in that year that the followers of Brigham Young planted their shrunken potatoes in the ground where the city of Salt Lake now stands, and irrigated the sun-baked soil from the waters of City Creek.

In 1849 and 1850 the gold diggers of California were very much perturbed about securing supplies of fresh vegetables. Few imagined that any produce of that kind could be grown on the banks of the Sacramento or its tributaries, and some of the more optimistic congratulated themselves that the Hawaiian Islands, then called the Sandwich Islands, were so near, since vegetables might be brought by boat from these islands to supply the miners.

The first plow share turned up the fertile soil of the Gallatin Valley, Montana, in 1864, and from that time on water began to be used in a crude way and in limited quantities by the farmers and stockmen of the mountain States. The Greeley colony in Northern Colorado was not established until 1870, and little irrigated produce was raised until two years later.

LATER WORK IN CALIFORNIA

That now famous district, the citrus groves of Southern California, had a still later start.

These localities where irrigation was first practiced, and a few more that might be named, comprised the greater part of American irrigation development during the first 25 years. Since then there has been a steady and rapid increase in the area irrigated, and also a marked improvement in the character of the works built and the methods and organizations employed.

The rapidity of this increase can be shown best by the following figures, taken from the decennial census reports: Stated in round numbers, the area irrigated in 1889 was three and two thirds million acres; in 1899 it was seven and a half million; in 1909 thirteen and three-fourths million, and in 1919 somewhat over nineteen million acres.

At the present time only two countries in the world surpass the United States in the extent of their irrigated areas. These are China and India. The ancient irrigated countries of Egypt, Italy and Spain, together with France and Russia, with numerous other countries which practice this art, have been left far in the rear.

The history of irrigation development in the arid States may be divided into four more or less distinct periods. The reclamation of bottom lands bordering on streams by individuals, groups of individuals and corporations constitutes the first of these.

EARLY OPERATIONS PROFITABLE

In this early development those who owned the land controlled the water and built the necessary works. Almost without exception the lands thus reclaimed proved a financial success. The large profits which accrued from a union of cheap land and cheap water were responsible in a measure for the failures which characterized the period which folowed.

The second period was noteworthy for the extent of its corporate canal

(Continued on Page 34)

Our Water Resources

By Frank Adams

PROFESSOR OF IRRIGATION INVESTIGATIONS, UNIVERSITY OF CALIFORNIA, AND IRRIGATION MANAGER, U. S. DEPARTMENT OF AGRICULTURE

A RESUME OF THE ACTIVITIES OF STATE AND FEDERAL AGENCIES

IRRIGATION is so nearly a universal need in California agriculture, and the range of California agriculture is so wide, few realize the task confronting the public agencies charged with extending the general fund of irrigation information. It may, therefore, be of interest to readers of Orchard and Farm to review briefly what has previously been undertaken and what is now under way in irrigations in this State.

A matter of general interest that might be mentioned in this brief review is the new irrigation map of California now on the press in Washington. This has been prepared by the Irrigation Investigations of the U. S. Department of Agriculture in co-operation with the State Department of Engineering and the State Water Commission (now both in the State Department of Public Works) and the College of Agriculture.

NEW MAP AVAILABLE

While intended as a revision of the map published by the same agency in 1912 in co-operation with the State Conservation Commission, the new map is so greatly improved both by correction of the base and by the addition of relief and several other new features that it really is a new map.

The printed scale is eight miles to the inch, which makes it the largest full State map printed; the features embodied include the irrigated and irrigable areas, principal irrigation canals, principal power conduits, principal hydro-electric plants, all rainfall and stream gaging stations now maintained or for which there are published records, location of important reservoirs and reservoir sites, etc.

The relief is the work of John H. Renshawe, chief relief artist of the U. S. Geological Survey, whose services were contributed generously without charge by the survey.

The map will be printed, as previously, in three separates covering northern, Central and Southern California; also in limited edition as a single map of the entire State. Copies of the map, for which a nominal charge will be made, will be ready for distribution within the next two months and may be obtained by application to the State Department of Public Works at Sacramento.

From time to time, as funds have been available for it, the State Department of Engineering has undertaken studies of irrigation resources and possibilities in particular sections of the State, the more important of these, completed or under way, covering the Kern River area, Tulare County areas, and San Jacinto Basin. Such work almost always has been done in co-operation with local agencies.

STUDY STREAM SYSTEMS

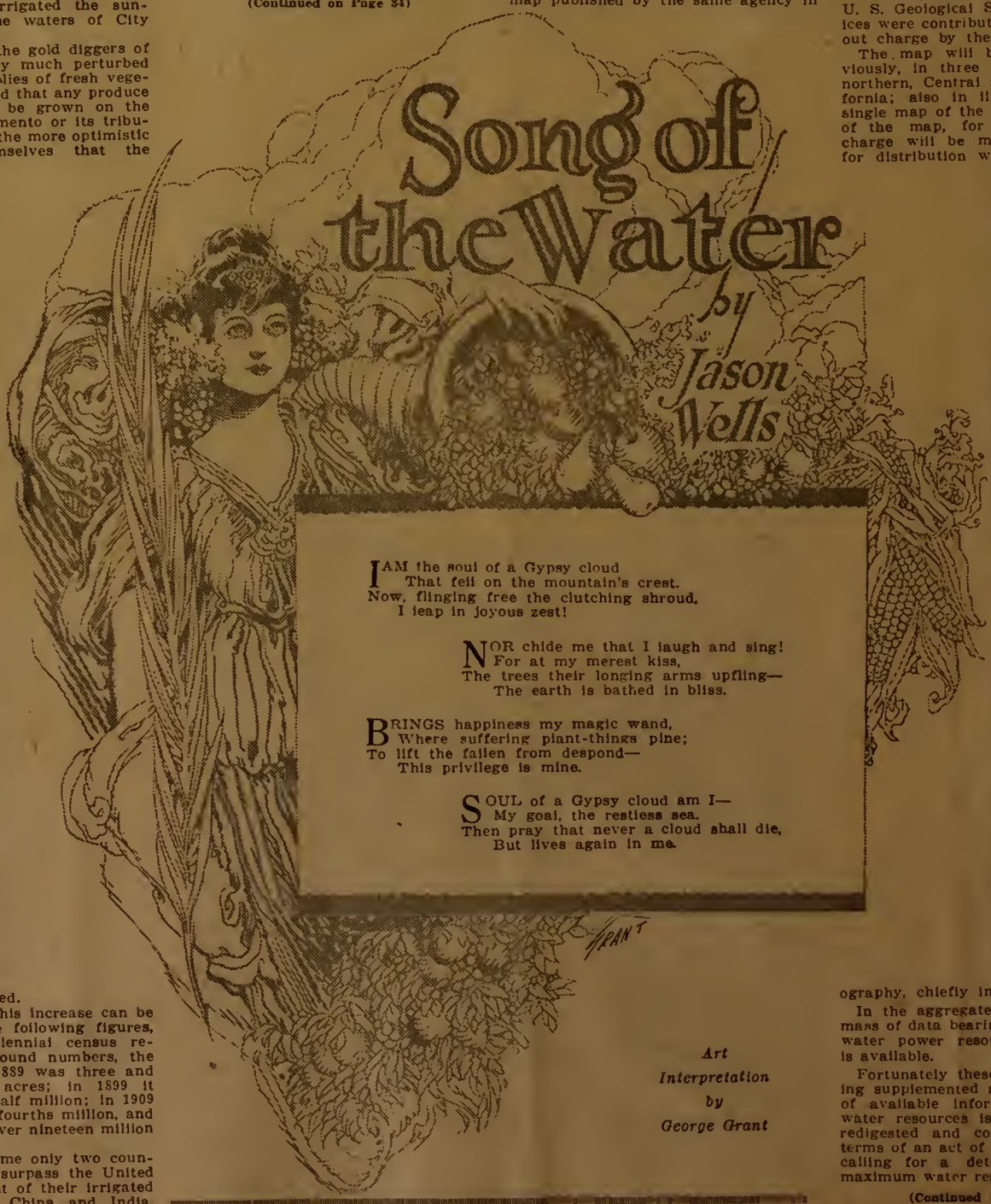
Similarly, the State Water Commission and the Irrigation Investigations of the U. S. Department of Agriculture have taken up particular localities or stream systems for study of development possibilities.

At least since 1900, also, the U. S. Geological Survey has been continuing the systematic gaging of streams, has made detailed investigations of underground water resources, and has been mapping topography, chiefly in the valley areas.

In the aggregate, therefore, a large mass of data bearing on irrigation and water power resources of California is available.

Fortunately these data are now being supplemented and the entire fund of available information bearing on water resources is being retabulated, redigested and correlated under the terms of an act of the last Legislature calling for a determination of the maximum water resources of the State

(Continued on Page 33)



Art Interpretation by George Grant

PRACTICAL POINTERS
IN FEW WORDS
for Busy Farmers

Direct Marketing Plan—An Idaho producer of fruit and truck crops is said to have realized handsome profits through a unique plan of distribution. He chartered a freight car from the railroad company, and laid out an itinerary covering a number of small towns. At each town he opened the car at a siding, inserted advertisements in the local papers and sold his fruit and vegetables direct to the consumer. First, however, he took the precaution of offering his products at wholesale prices to the local merchants, who are said to have refused to deal with him in almost every case, and to have predicted failure for his enterprise. So successful was the plan, however, that he has repeated his trip several times, the high quality of his stuff having won many repeat orders and new customers. His products are sold at lower prices than prevail at local stores, yet excel the local stuff in quality and freshness; in fact, in some of the towns fresh fruits and vegetables were a rarity until he inaugurated his traveling store.

Pork as a By-Product of Dairying—In reply to this question: "Do you consider the hog absolutely essential on the dairy farm as a means of realizing greatest possible profits from by-products?" more than 80 per cent of a representative number of dairymen answered "Yes." As the means of determining the feeding value of skim milk, one rule is to multiply the market price of live hogs in cents per pound, by five. This will give the approximate value per 100 pounds of the skim milk. If the milk is fed in combination with grain, multiply by six instead of five. Another method, commonly used in the corn-belt, is to consider 100 pounds of skim milk equal in value to one-half bushel of corn for feeding hogs. Many dairy and creamery men consider buttermilk just as valuable as skim milk for hog feeding. Because skim milk and buttermilk are high in their digestible protein and carry a good bit of mineral matter, they give best results when combined with such feeds as corn and barley. Fortunately, the carbohydrate feeds with which these by-products combine so well are those found most largely in the sections where dairying is well-developed. Combinations of skim milk with other protein supplements such as oil meal, middlings, and tankage show skim milk to have a considerable advantage, gains being larger and more economical than with the other nitrogenous feeds.

Value of Uniform Egg Grades—Indirectly a tribute to the enterprise of Pacific Coast poultrymen is the announcement by Purdue University, of Indiana, that this institution will hold a four-day egg show during May. Over 750 dozen eggs were shown at last year's show. The purpose of the exhibition is to encourage production of more and better eggs, in recognition of the fact that farmers of the Central West receive 20 to 40 per cent less for their eggs than do those of California, because their product lacks the uniformity that buyers have been educated by progressive western producers to expect!

Pre-determining Pump Performance—The element of risk in selecting a new deep-well pump has been practically eliminated by the methods employed by leading manufacturers to test their equipment, according to I. N. Johnston, General Manager of the Johnston Pump Co., The standard test plant consists of a pit from which any volume of water can be released. The pump is temporarily installed over a water filled pit and operated with the power.

Of course, there is no pit in the final intsallation as there is no need for this dangerous and obsolete hole. The pump then is operated, and the water delivered through the discharge pipe to a cement weir box where the exact flow in inches or gallons per minute can be gauged accurately.

In order to determine the foot lift of the pump, the discharge pipe is equipped with a gate valve which can be closed down. As the gate valve is closed the pressure gauge on the discharge pipe records the exact pressure caused by the closing of the gate valve and this gauge registers the foot lift.

The closing of the gate valve likewise exerts a load upon the motor and calculations can be made of the exact horse power required economically to operate the pump in order to raise the water a certain number of feet and to develop a certain quantity of water. The pump pulley can be changed in the testing plant to determine the most economical speed at which the pump should operate.

After a pump has undergone the many tests in the testing plant the purchaser knows exactly what he can expect of his pump and the element of guess work is totally eliminated.

Metal Irrigation Equipment—To meet the demand for lasting, labor saving irrigation "accessories," California inventors have developed many valuable metal devices. Among these, as listed by the California Corrugated Culvert Co., of Berkeley, are a variety of gates, flumes and adjustable dams, made of galvanized ingot iron and cast iron.

Included is the cast iron slide headgate, operated by a handwheel and threaded stem, and adapted for controlling water in canals, ditches and reservoirs and through river levees.

Another cast iron gate is that devised for the automatic drainage of low-lying lands. A double hinge makes the valve very sensitive to water pressure from either side, allowing it to open freely to drain land above, but causing it to close instantly against back blow. This is valuable along the sea coast and in the "Island" country where there is a great deal of fertile land which lies between the high and low levels of nearby bodies of water.

The principal sheet metal gates are the "lateral" and the "irrigation" types. These are for controlling the flow from ditch outlets under light pressures, and are especially useful for alfalfa and cultivated crops. All the foregoing gates are intended for use with pure iron corrugated pipe.

There are two types of portable metal dams for irrigation work. One of these is adjustable for various widths of ditches, and the other is a simple sheet of heavy-gauge ingot iron of semi-oval shape, with a roll formed on the straight edge to serve as a handle.

A radial headgate with automatic control is very effective in controlling water levels in ditches and canals, either from the up-stream or the down-stream side. It serves thus as a safety valve for the system, protecting the canal banks against floods, and also, by making it possible to keep the canal nearly full at all times, does away with the annoyance and danger of squirrels and other rodents working in the banks. Naturally, the automatic feature greatly reduces necessary supervision. The hand-operated radial gate is well adapted to the rapid opening or closing of rather large waterways, since it operates upon a hinge bearing and with a minimum of friction.

The Indispensible Disc Harrow—The following tribute to the disc harrow is especially interesting and informative, since it comes from a widely-known tractor man, H. P. Cowley, General Manager of the Kroyer Motors Co., which recently has moved its plant from Stockton to Los Angeles harbor, and is now engaged in big-scale production of farm power and cultivating machinery:

Next to the plow, the disc harrow is the most valuable tool employed on the farm. It performs a two-fold work; first, it pulverizes the turned-over soil and second, it in a measure, packs the subsoil and makes a fine, firm seed bed. Double discing after the plow leaves the soil level and in a fine condition for seeding, and conserves every drop of moisture until it is drawn up by the crop itself.

If the soil is quite loose the discs are set at a slight angle, while if the ground is firm the discs are set at a wider angle so as to cut deeper.

Fall plowed land should be gone over with a disc harrow set at an angle to cut a good depth. This pulverizes the soil and leaves a good seed bed.

The advantage of discing before plowing is the fact that the loose soil falls to the bottom of the furrow, filling up the air spaces and forming a compact seed bed that affords a favorable condition for the growth and development of the plant roots.

In the spring of the year, alfalfa fields are in great need of renovation. They become sodbound, and discing cuts up the crowns of alfalfa, loosens and aerates the surface soil, cuts out fox tail and other injurious weeds and improves the crop generally. It also mulches the surface of the soil causing the young stubble to grow more rapidly.

The action of the disc upon the soil makes the disc harrow a most excellent cultivator. The discs thoroughly pulverize the soil, destroy weeds and grass and leave the undersoil compact, with a fine soil mulch on the surface.

In districts where the orchards and vineyards have to be irrigated, the moisture is held by discing after irrigating. The unirrigated orchards and vineyards are greatly benefited by discing to destroy the weeds and conserve the moisture.

Discing generally stirs up considerable dust; therefore it is necessary that the tractor be dust proof.

Windmill Holding Its Own—Modern mechanical triumphs have not displaced the good, old windmill—"not by a long shot." In fact, great improvements have been made in wind wheels. These include noiseless, self-oiling gears, use of better metal, increased capacity and greater ease of operation. A standard installation is that recently made on the Callette estate at Montebello, which includes a 36-foot tower, with 3000-gallon tank. The wheel is of the aermotor type. The water is used for domestic purposes and for light irrigation.

San Bernardino Orange Show—The Twelfth National Orange Show promises to be the greatest ever held in the history of the State. The time is February 17 to 27. Fruit displays will be combined with educational exhibits. Two mammoth tents will house the industrial section. The U. S. Forestry Department will have a huge display showing its work in the National forests. Describing the famous "Rim of the World" highway, will be an exhibit installed by the mountain resort proprietors. Results of many years' research work at the Riverside Citrus Experiment Station will be displayed. Everyone interested in fruit growing should attend for the educational value, if for no other reason. But there will be features to interest young and old from all walks of life.

Concrete Pipe Pointers—Conducting an educational campaign for the purpose of enlighting users of cement pipe, the Southern California Associated Concrete Pipe Manufacturers point out some interesting factors involved: (1) "Do not be deceived by the beautiful brown, smooth exterior finish of dry, hand-tamped pipe, which usually is camouflaged with a heavy interior coating of white wash. (2) Do not allow the manufacturer of this kind of pipe to tell you how nicely it 'rings' when tapped 'gently' with a hammer. (3) Beware the water loss of 30 to 50 per cent which is associated with this kind of pipe. Lack of a strong head of water does not indicate that there is no need for a dense pipe." For the protection of prospective buyers in Southern California, the association offers to make free tests. Address 1125 Central Bldg., Los Angeles.

Ben Gonnadooit Says

My wife says ef I'd pay more attention to th' Farm Adviser and spend less time listenin' to hobos, peddlers, agents an' wind-jammers thet visits our place, we'd be more prosperous.

The which may be true—but its gotta be proved to me! So far, my experience has been jest th' other way.

I pays my good money fer Farm Bureau dues, an' what do I get out of it? Jest a lot more work; no labor-savin' ideers whatever! Th' Farm Adviser comes aroun' an' when I ask his advice, he allus points out a lotta things thet OUGHT to be done, an' never shows how I kin CUT DOWN my burdensome duties. Moreover, an' in addition, I bin appointed to about seventeen committees an' boards, more or less. Why, it's gittin' so I have t' do practically all my fishin' on Sunday!

Th' only real vallyble ideer I've picked up lately was one I gained f'm a cross-country traveler thet stopped about noon th' other day. (Wife says they allus seem t' come along about meal time, but that only goes t' show they got good business jedgement!)

He said he'd show me how to rig up a self-feeder fer th' chickens, so I turned th' horses out in th' pasture fer th' rest of th' day an' we went t' work. We didn't quite finish by dark, so I asked him t' have supper with us an' stay all night.

As early as nine o'clock next morning we was at work again, an' before night we had it all rigged up—a contraption connected with a alarm clock so thet by settin' the alarm fer five o'clock, I kin feed th' chickens in the mornin' without even gettin' out o' bed! Th' alarm clock winds up a string, an' pulls a trigger whitch releases th' door of a feed hopper, an' allows th' grain t' run out.

It has worked fine ever since, except two or three mornings when I fergot t' wind th' clock th' night before.—BEN GONNADOOIT.

Long Pruning---Lessons From Three Years' Work in Southern California

By George P. Weldon
CONTRIBUTING HORTICULTURAL EDITOR OF ORCHARD AND FARM
POMOLOGIST, CHAFFEY JUNIOR COLLEGE OF AGRICULTURE

AS A part of the experimental work for the benefit of deciduous fruit growers, the writer has well under way a number of long-term pruning experiments which it is planned to continue for a period of at least 10 years.

George P. Weldon

The local aspect of all orchard problems must not be overlooked, but in this work an attempt is being made to apply fundamental principles.

The splendid work of recent years, accomplished by Tufts at Davis, has resulted in some definite conclusions regarding the best practices.

Corroborating and strengthening the array of facts regarding long pruning as presented by Tufts are those of Whitten which have been the outgrowth of years of rich experience and most careful research work.

METHOD OF EXPERIMENTING

At present, all the pruning experiments being conducted by the writer are with peaches and apricots, these being the two kinds of fruits which have suffered most from drastic, nonsensical pruning practices in which many of us have had a part.

In general, three systems have been followed in four different experiments. These for want of better names might be termed: Short, medium-long and long pruning.

In the case of short-pruned trees, the plan has been to cut back the branches by removing a certain amount of terminal growth. In the experiments an effort has been made to follow as closely as possible the old system practiced with peaches and apricots for years; a system of heavy cutting back, with the idea of developing a low-growing, spreading type of tree, with a generous supply of new growth each season.

The trees pruned "medium long" have had the terminal growth cut back moderately; this might be considered a modified system of long pruning. (It was thought this system might have the advantage of preventing undesirably tall, rank terminal growth.)

In the long-pruned block of trees the attempt has been made to follow the plan known so commonly as the "Whitten system;" that is, terminal growth has not been removed except low down where tips of extending branches interfered with cultivation.

Trees in the experimental orchards are being pruned now for the third season. Certain outstanding results are very apparent even in this short period of time.

First of all it was very apparent at the beginning of the third season's pruning, that long pruning, when practiced carefully and consistently for a few years, means less work and therefore less expense than the heavy cutting back or short system. A striking illustration of this fact was presented by the C. N. Poe apricot orchard, San Bernardino County.

In this orchard as in others the three systems are being followed. At one time the trees all were pruned short, but in recent years drastic cutting back methods had not been practiced. These trees now are eleven years old, and are fairly well headed, although they have too many main branches for best results.

These have been left, as their removal now would necessitate large cuts, and would induce too much vegetative growth.

COMPARATIVE OBSERVATIONS

Recently in order that some comparative figures might be secured, two trees of about equal size in the above experiment — one which had been pruned short for two years, and one which had been pruned long for two years—were pruned in a similar manner for the third consecutive season.

The different points considered were: (1) Time occupied in pruning each tree; (2) Number of cuts in the pruning of each tree; (3) Weight of wood removed from each tree, and (4) Condition of the buds from each tree. The results are indicated in the accompanying table:

POINTS OBSERVED	SHORT PRUNING	LONG PRUNING
1—Time Required for Pruning	14 Minutes	8 Minutes
2—Number of Cuts	285 Cuts	116 Cuts
3—Weight of Wood Removed	51½ Pounds	31½ Pounds
4—Condition of Buds	Small, Sickly, Lacking in Vigor	Large, Plump, Vigorous

The superior condition of the buds upon the long-pruned tree was apparent at a glance, as they were borne upon well-hardened wood. The buds on the short-pruned tree were upon succulent growth.

These data are of especial interest in view of the statement by many orchardists that they could not afford the time required to thin out branches under the long-pruning system.

No claim is made, however, that this one isolated case is a criterion for all cases; in fact under some conditions the results might be reversed. However, it is probable that similar results would be encountered under most average conditions.

SIZE OF TREES

Since every fruit grower is interested in growing trees of the largest possible size, the conclusions of Whitten and Tufts are especially interesting. These experimenters have emphasized the fact that heavy cutting back results in stunted growth, while little or no cutting back means maximum diameter growth in the branches.

The truth of their findings in Northern California has been verified in our experiments. In the case of some three-year-old peach trees, where topped-back rows alternate with long-pruned rows, there is at least 25 per cent better growth in the "long" trees. The stunting effect of topping trees is noticeable in very case where this treatment has been given.

MECHANICAL STRENGTH

Breakage in poorly-pruned, or too heavily-laden, orchards is a common occurrence, and it is very necessary that close attention be paid to those things which are conducive to mechanical strength.

Authorities on pruning have emphasized the desirability of proper spacing of the framework branches, to avoid bad crotches, thus lessening the danger of breakage, and, while emphasis on this phase of the pruning work is wholly desirable, there are other mechanical factors requiring consideration.

In the formation of the framework, for instance, main upright branches, because of their greater strength, should be given preference over lateral (side) branches. In the short system of pruning, there is too much cutting to laterals for the best development of strong branches, and breakage is frequently the result of shoulder cuts made in the removal of the main leaders.

Every effort should be made during the first three or four years' pruning to develop about six main upright branches for the framework. When too many are allowed to grow it will be at the expense of individual strength and breakage danger therefore will be increased.

FRUIT WOOD

Growers have expressed a fear that trees left without cutting back from the tips would lose fruiting wood low down, and the fruit would be so far above the ground that picking cost would be increased. Observations have indicated, however, that there is no ground for such fear. In fact, there has been a uniformly better develop-

(Continued on Page 15)

Contrasts Between Long and Short-Pruned Trees

(1)—Short-pruned apricot tree after season's growth. Note the large number of small, unthrifty branches.
(2)—Short-pruned apricot tree from which 51½ pounds of wood was removed, necessitating 285 cuts.
(3)—Long-pruned apricot tree after season's growth.
(4)—Long-pruned apricot tree from which 31½ pounds of wood was removed, necessitating 116 cuts.

EDITORIAL DEPARTMENT

Timely Topics among Farm Folk

James C. Knollin, Managing Editor

Do We Appreciate This Resource?

WHEN cattle roamed over thousands of acres where now are smiling fields; when "two-gun" pioneers were a law unto themselves—water is said to have been referred to contemptuously as "Good only for putting under bridges."

We smile now at this example of frontier humor and imagine that we have come to appreciate the value of water! But have we? Speaking now in terms of irrigation only, we have just begun to learn the value of this precious liquid! Furthermore, we have only begun to know how to use it.

We speak of the water resources in a certain district as "all taken up," when as a matter of fact much more is being wasted than used.

In truth we are entering upon the greatest and most interesting era in irrigation engineering—that of water conservation.

We are learning that over-irrigation has killed many orchard trees; we are learning that appalling waste frequently attends the use of open ditches and flumes; we are learning that one inch of water may be made to do the work of two in many instances.

One way to cut the cost of production is to cut the cost of irrigation. And sometimes this involves expenditures for better equipment. Study of the articles, illustrations and advertisements in this number will be of timely interest and great practical value to every reader who irrigates—and that includes most of us.

Credit Where Credit Is Due

FARMERS and friends of farmers everywhere are discussing credit! Only adequate credit, of both the long-term and short-term varieties, can oil and release the clogged gears of agriculture.

The War Finance corporation is making an effort in the right direction, but it takes so long to get a cumbersome organization of this kind under way that little immediate relief is in sight for the country as a whole.

What we need is a system that will meet difficult periods such as the present before matters become acute. Prevention is better than cure—in finance as in disease.

What can the farmer, individually, do to help himself? Very little—directly! But he can do much indirectly!

So says a prominent California banker, known as a friend of the farmers, and said to be one of the best posted financiers of the State so far as food-production is concerned.

And what is his remedy? Support of the Farm Bureau! "Let every farmer get behind his local farm bureau and thus behind the National Federation. That is the way to get financial relief."

So says this powerful California banker, who goes on to show that the problem is too big for individual solution. Existing credit machinery cannot be improved upon except by national legislation. National legislation favorable to farmers cannot be secured except through the insistence of a powerful National farmers' voice.

This voice, in the form of the American Farm Bureau Federation, has forced through, in the one year of its activity, probably more legislation favorable to agriculture than has been passed during any previous ten-year period.

The Farm Bureau is after better credit facilities now and will get them. Meanwhile about all we can do is to fight off the bill collectors, try to get some relief through the War Finance Corporation, pray that the local banker, will stay with us, and HANG ON!

Who Says He Is "Broke"?

ALL this talk about *credit* must not be allowed to *discredit* the business of farming! The California producer is going ahead with business as usual. He has many needs to supply and is supplying them.

One of the things that has enabled California to weather the financial storm so much better than other States is the diversity of her crops. And those who hear tales of woe in certain districts must remember that in other districts high prices and prompt payments prevail. In other words, we must not judge the condition of the farmers of the entire State by the difficulties that may beset temporarily any one section or group.

While giving our support to the movement for better credit facilities, let us not make the mistake of creating a spirit of gloom.

Thousands of growers have taken care of part of their obligations and will further liquidate their loans this year. With the coming of the new harvests, many observers believe, will be ushered in the greatest period of genuine prosperity the State has known for years. Meanwhile, we are starting off the New Year with a bang! Who says the farmer is "broke." Let's go!

What Do the Land Banks Need?

BOTH the Federal and Joint Stock land banks need a ready and steady demand for their bonds more than anything else, declares A. W. Hendricks, vice president of the California Joint Stock Land Bank, operating under the Federal Farm Loan Act.

As long as they are dependent upon private capital for the purchase of bonds (from the proceeds of which all loans are made), there is no certainty that sufficient funds to meet all applications will be available, he asserts. The "tax-free" feature of the bonds is not enough inducement to unlock a sufficient amount of private capital, the banker says. For the advantage offered by this inducement is offset by the fact that loans made on such bonds are not eligible for discount at Federal Reserve Banks.

In fact, with the present agitation against tax-free securities, financiers are giving thought to other means of securing capital for loaning through the land banks. One suggested method is to require the Federal Reserve banks, by law, to keep a certain percentage of their surplus invested in farm loan bonds.

Another method would be to require the Federal Reserve Board to recognize paper secured by farm loan bonds and thus make it more attractive to the investor, who under present conditions, if confronted with the necessity of raising money promptly, may have to sacrifice his bonds by sale.

With one or the other of these reforms, the problem of securing money to loan probably will be solved.

Two other sources of irritation remain. One is the present limit of $10,000, which many farmers consider inadequate for a single loan. Another is the fact that the farmer-owners of stock in the Federal Land Banks have no voice in the management of the banks, the loans being made and approved by officers appointed by the Federal Board, which, in turn is under the guidance of the Secretary of the Treasury.

Such a situation is not in the spirit of the original Farm Loan Act and no doubt will be remedied.

Gradually this great banking system seems to be surmounting all difficulties. In the January number of ORCHARD and FARM was described its victory over private brokers and money-lenders who sought to destroy it. At least we are taking two steps forward for every one backward!

Capitalizing the Atmosphere

THE remarkable story of wireless telephone development in rural districts is told in this number of ORCHARD and FARM.

Hurtling strangely through space, cryptic messages warn the farmer of market "breaks" and impending frost.

We read, also, of the increasing importance of an amazing industry—the fixation of fertilizing constituents removed from the air that we breathe.

Again—the story of the airplane and its value to farmers is less than half told.

Agriculturally speaking, we are "up in the air" in more ways than one just now! And this isn't all hot air either!

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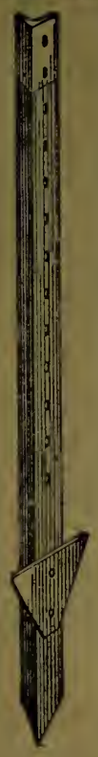
CONCISE CONTRIBUTIONS

On practical agricultural subjects are invited. Unavailable manuscript will be returned promptly if postage is inclosed. Preference is given to accounts of actual experience, telling how, when, where, who and why.

Red Top
GUARANTEED
Steel Fence Posts



YES, there can be improvements even in fence posts! You don't have to break your back digging post holes these days; get RED TOPS—they drive like a stake.

But that isn't all; they don't burn, rot or buckle; they make a strong fence line that lasts for years. They hold the staples. Practically eliminate repairs and upkeep.

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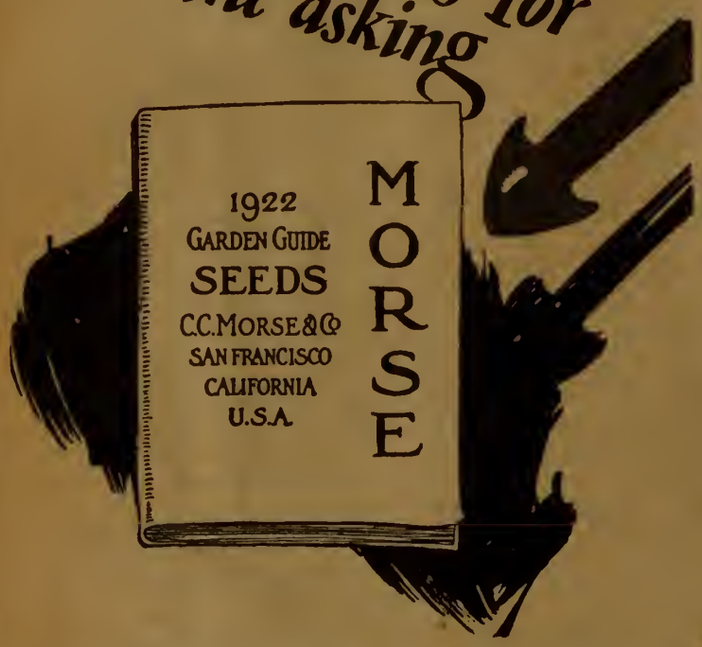

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A Living From One-Half Acre

By Edith Sanborn

THAT not every "ranch" must consist of a large acreage of land to be highly productive or capable of returning a comfortable living to its owners, is being proved in many part of California, where intensive farming has been developed so successfully.

But few have accomplished as much in the way of "concentration" as Mrs. M. M. Jackson of Athens, California.

Her half acre "farm" is a model of systematic planting, general arrangement of buildings and efficient use of every available foot of ground.

This small farm for the past 15 years has provided an income for Mrs. Jackson, and Mrs. Dowling who lives with her, and every tree, vine, shrub, berry bush and flower bed has been planted by them with the purpose of utilizing every foot of ground to the best advantage.

A VARIETY OF FRUIT

A tour through Mrs. Jackson's "orchard" disclosed two dozen peach trees, twelve apple trees, eight pear trees, plums, prunes, nectarines, a quince, Persian mulberry, apricot, olive, fig, walnut, loquat, sapote, three avocados, cherimoya (custard apple) and a few orange, lemon and grapefruit, beside two banana trees which bear delicious fruit regularly. The trees all have been brought to a high state of cultivation and bear abundant crops each year, and besides supplying the owner with all she can use, both fresh and canned, prove a profitable source of income. For Mrs. Jackson's fruit is of such excellent quality that she never wants for a ready market.

The trees were so set out that the spaces between could be planted to a few grape vines, as well as blackberry and raspberry bushes, and strawberry plants, for home consumption.

ONLY BEST STOCK

Mrs. Jackson informed us that only the highest type of nursery stock secured from reliable nurserymen had been planted. "I do not give an unprofitable tree space on my 'ranch'," she added, "for I have no time or room for slackers, and it is not only a waste of time and money to plant inferior stock, but also very discouraging as to the results obtained."

With this remark, she took us down the arbored path to the goat barn, where seven head of goats, including five pure bred Nubians, are kept. Mrs. Jackson stated it was her aim to raise only pure bred animals, upholding her principle of producing only the highest grade, whether fruit or livestock.

She has made great pets of the goats and they followed her about the barn in their inquisitive manner, as she told us that she firmly believes contented animals produce more and better milk.

Beside providing the owners with all the milk they can use both raw and for the making of butter and cheese, for home consumption, the goats furnish a surplus which is sold daily to her regular customers.

Thus, another source of revenue results. Butter made from goat's milk,

(Continued on Page 34)

The Little Landers

Above — Mrs. Jackson and Mrs. Dowling inspecting one of their avocado trees, from one limb of which more than $25 worth of fruit was sold last season.

Lower left — These three Hale peaches, from the Jackson-Dowling "ranch" weighed just two and one-half pounds!

Right — Mrs. Dowling with two pure-bred Nubian does, valued at more than $500. Butter and cheese, made from goats' milk, are important products.

Their half-acre has afforded these enterprising little-landers an income of more than $1000 annually, in addition to furnishing practically all the food for the family—and this does not include increased value of the property and the "livestock."

Shall We Farm by Radio?

By Herbert Warren Dodge

SINCE last April market reports and other Government information have been sent daily by wireless from stations located in various sections of the United States.

To the enterprising farmer this free service means considerable time saved, as he knows the nation's market news and fluctuations as rapidly as they occur.

Radio stations at the following places broadcast agricultural market reports and weather signals:

Elko, Nev.	Washington, D. C.
Reno, Nev.	Hazelhurst, N. Y.
Bryan, Ohio.	Iowa City, Iowa.
Bellefont, Pa.	North Platte, Neb.
Cincinnati, Ohio.	Rock Springs, Wyo.
St. Louis, Mo.	Cheyenne, Wyo.
Omaha, Neb.	Salt Lake City, Utah.

IN ACTUAL PRACTICE

Many California farmers are taking advantage of the service. Among these are George M. Turner, who has a farm in the Stockton district, and Neal Tait of Vacaville, who is said not only to receive the market reports daily, but also to disseminate the information to all the farmers in his vicinity.

The cost of apparatus capable of intercepting these signals is not prohibitive. A modern receiving set may be purchased for as little as $35. Many of the farmers, however, enjoy the use of larger sets, including amplifiers, which make the signals louder and less susceptible to interference from other radio stations. A very efficient and complete outfit may be had for from $60 to $150.

The weather service is as practical as the market reports and of even greater value to the farmer. THIS EFFICIENT SERVICE PREVENTS LOSSES FROM STORMS AND FROST RUNNING INTO THOUSANDS OF DOLLARS EACH YEAR.

WORLD NEWS

In all of the larger cities of the United States there are high-powered radio stations which send out newspaper press dispatches containing all the latest world's news appearing in the next editions of the newspapers. Foreign news as well as domestic occurrances are given in brief over the wireless telephone.

By intercepting these messages the farmer may know all the important news from ten to twenty-four hours before he would learn of it in the usual way.

The isolated farmer has very little chance of hearing grand opera and similar musical entertainments, but all this and more may be brought to him by the wireless telephone.

Various theaters and hotels and prominent radio companies in many cities send out music at regular schedules for the benefit of the general public.

All Can "Listen In"

A WIRELESS telephone for every farm is not an idle dream. Hundreds of farmers have wireless equipment now. Government and private agencies are broadcasting market reports, weather forecasts, concerts and other entertainment. Who can prophesy what the next few years will bring? In many ways, this innovation is the most remarkable ever adopted by American agriculturists, and, as usual, California is taking the lead in its development.—Editor.

A few years ago no one would have believed that a farmer, many miles from any city, comfortably ensconced in an arm chair in his sitting room, could listen to grand opera renditions. Now it is an accomplished fact. Dances have been conducted with phonograph music, transmitted through space for many miles.

The receiving apparatus may be equipped with loud-speaking devices which amplify the music so that it can be heard all over the room.

LOCAL EXPERIENCE

In California, Oregon and Washington many farmers obtain music by radio. In San Francisco there are three large stations which send out musical selections nearly every night. At the California Theater there is apparatus capable of transmitting music furnished by the orchestra over a distance of a thousand miles.

The Fairmount Hotel also provides entertainment of the same kind up to the same distance. The third station, the Presidio at San Francisco, has very powerful instruments, and, not having access to an orchestra, sends out phonograph music.

Each of these three stations also sends out baseball scores, football results, racing news and other sports in season.

The Leo J. Meyberg Company, cooperating with hotels, department stores and other agencies, is broadcasting from both San Francisco and Los Angeles.

At noon every day and at 10 o'clock in the evening Government stations transmit time signals obtained from the observatories. This is another feature of free established service that the farmer takes advantage of, enabling him always to have the correct time available.—H. W. D.

—Illustration, Courtesy American Radio and Research Corp.

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Has Your Community Studied the Junior College Idea?

By Charles J. Booth

DEAN CHAFFEY JUNIOR COLLEGE OF AGRICULTURE, ONTARIO, CAL.

A Revolution in Education

PERHAPS the "Junior College Idea" would solve some of the problems of your district! What it is doing for the Ontario section of San Bernardino County is revealed in this article, written especially for ORCHARD and FARM. Dean Booth is considered one of the most progressive and successful educational leaders of California and "knows his business."

READERS of ORCHARD and FARM are familiar with the term, Junior College; for, month by month, as they have read Mr. Weldon's articles, they have doubtless noted his title: Pomologist, Chaffey Junior College of Agriculture. They may be interested to learn something more regarding junior colleges in general, and the Junior College of Agriculture in particular.

By recent enactment of the Legislature the Junior College is now an integral part of the school system of the State of California. Beginning next March, Junior College districts will be established in many parts of California. These may be coincident with existing high school districts; or they may be formed by the union of two or more high school districts; or they may comprise an entire county. The law provides for a local board of trustees, for the course of study, for affiliation with the University of California, and for financial aid on a basis of combined district and State support.

SCOPE OF INSTRUCTION

These junior colleges are intended primarily to occupy the field of the freshman and sophomore years of the university. They will be established in the very near future throughout the State, so that one-half of the university course will be brought directly to the doors of the people. Already plans are under way whereby the work done in these institutions may be given full credit toward a college degree in the higher institutions.

But the junior colleges will do more than this. Established by direct vote of the people of the districts in which they are located, these institutions will strive above all to minister to the educational needs of these communities.

PRACTICAL STUDIES

Vocational they are bound to be. The chief problem of life for many a long decade to come will continue to be the earning of daily bread; and the junior colleges will not fail to do their part to train young men and young women to be proficient in that great task. The type of instruction will depend upon the community. Where the life of the community centers in things commercial, the instruction will deal with the problems and opportunities of the business world. Where that activity is essentially industrial, the courses also will deal particularly with industry. Where the community is rural, and faced with rural problems the junior college will concern itself primarily with rural affairs.

Such an institution will be, in fact, if not in name, a Junior College of Agriculture. In this great rural State of ours the opportunities open to such a junior college are stupendous.

In the first place, the Junior College of Agriculture can offer two years beyond the high school to young men and young women who are interested in the business of farming, but who either prefer to remain at home or must needs do so. A very large proportion of the students of the University of California live in the cities of Oakland, San Francisco, Alameda and Berkeley. The same is true, for Los Angeles, of the University of California, Southern Branch. The same is true of every other higher institution in California. It costs a great deal to send a young man or a young woman away from home to college. When the first two years come within driving distance of the farms, many will be the young farmer who will take advantage of the new opportunity.

The Junior College Brings University Service to the Door of the Formerly Isolated Farm Home

MEETS COMMUNITY NEEDS

The instruction in this Junior College of Agriculture will be very concrete and definite, for it will be tested daily by the practice of the community. The farmer of today is alert for new ideas, and keen to put them into practice. The farmer with the long whiskers and the carpet bag is as obsolete today as the dinosaurus and the ichthyosaurus. There is no business that requires better brains or keener judgment than the business of farming. Rest assured, the educational institution set down in such an environment must, to quote the language of athletics, be "on its toes." The Junior College will minister to the farm; the farm will enrich the work of the junior college; and the farmer and instructor will both profit because of the opportunity to rub elbows, one with another.

There will be courses, also, for the adults of the community. What those courses will deal with will depend on the type of agriculture practiced. In some localities they will have to do with Horticulture and Viticulture; in others, Livestock and Dairying; in others, Field and Forage Crops; in yet others, combinations of some or all these subjects. In all communities there will be problems in insect identification and control, disease eradication, soil management, rural com-

munity life. At the time this is being written, the Chaffey Junior College of Agriculture is offering instruction every week to 150 farmers; and these 150 farmers are, in turn, instructing the instructors of the institution. It is a give-and-take proposition.

VALUE OF MEETING TOGETHER

That brings up another topic. It is impossible for 150 or 50 or 5 people to meet together without learning a great deal from each other. The mere fact that they are discussing common problems means that in common they are working out the solutions to those problems. The Junior College of Agriculture will be of profound helpfulness to the farmers in assisting them to help each other.

The courses for adults are given in all portions of the Chaffey district. Night classes are held at Fontana, thirteen miles away, and at Alta Loma, Etiwanda, Cucamonga, and West Ontario, as well as within the walls of the institution. These classes are determined by the desires of the people taking the work. Courses in auto mechanics and millinery, dovetail with work in citriculture. An evening course in the spraying of deciduous fruits occupies one room, while adjacent to it students are busy with stenography and typing. Cooking and sewing and home nursing are favorites with the ladies; shop work and pruning courses with the men.

EXPERIMENTAL WORK

Chaffey Junior College of Agriculture has carried on, during the past six years, a certain amount of experimental work. This has been especially along the line of citrus fertilization, and the results have been watched with interest by a great many growers of orange and lemons. The relative fertilizer value of barnyard manure, complete fertilizer, tankage, sulfate of ammonia and cottonseed meal has been tested, the amount applied depending upon cost. Cover cropping has been compared with clean cultivation, and both with bean straw mulch.

Six years is a rather short time in which to appraise a fertilizer test; but some interesting facts already are becoming manifest.

This experimental work has been carried on in co-operation with the Citrus Experiment Station at Riverside; in fact, it is the desire of Chaffey Junior College at all times to keep in close touch with the work of the University of California and particularly of the College of Agriculture of that institutioon.

FARMERS AS ADVISERS

The experiments also have been watched from the beginning by an advisory committee of farmers. These men have made suggestions from time to time concerning details in the conduct of the tests—suggestions that have been timely, to the point, and keenly appreciated by the institution.

Chaffey owns and operates a 60-acre deciduous fruit farm. This is under the immediate management of Mr. Weldon, who in this way comes constantly into contact with the same questions that the growers of the Chaffey district must face. A committee of deciduous growers is in frequent consultation with Mr. Weldon, going over, with him, the problems of the district, and discussing ways whereby the Chaffey farm may be used in the solution of these problems.

The watch-word of the Junior College is Service to the Community; service not only in an educational way to the ambitious young people who seek more education than the high school has to offer, but service also to every adult who is willing to profit by the opportunities which the institution has to offer. The Junior College of Agriculture is an institution set in the midst of a rural community and endeavoring in every way possible to minister to its needs and to promote its well-being.

Science Made Simple

By Adam Phule

[Editor's Note—Probably no more startling or revolutionary article has been published than this contribution by the justly celebrated plant-breeder and investigator, Adam Phule. Mr. Phule's articles will appear exclusively in ORCHARD and FARM. Don't miss one of these great scientific discussions, so fraught with commercial possibilities and so refreshing in their originality.]

Article I—The Jelly Bean

ALTHOUGH I have never heard of a producing orchard of "ham" trees, the term seems very familiar to me and the possibilities for development are appealing. I have interested myself also in Professor Babylon Brooks' scheme as announced recently in the agricultural press, for growing macaroni and spaghetti on the same vine.

Prof. Phule

But after careful investigation, I do not believe either of these plans equal to one that I have developed. I refer to a proposed extensive planting of jelly beans.

By careful selection, these plants have been bred up to a high standard, including many varieties of flavor, such as peach, apricot, currant, apple, raspberry, etc.; in fact, all the well known jellies so desired for table use.

READY FOR EXPLOITATION

The development of this great new agricultural industry awaits only the magic touch of capital, most of the preliminary labor having been supplied by the writer, who modestly claims credit for the discovery.

There is very little labor involved in growing or harvesting the jelly beans.

But first let us review briefly the history of the work.

The first problem was to fix the various flavors. This was accomplished by budding with selected buds from the desired fruit trees and bushes. For example, the apple jelly is obtained from a jelly bean plant that has been budded to any desired variety of apple.

The next problem was to develop the "jelling" quality. This finally was solved by means of hypodermic injections of pectin—about a peck of pectin to the acre.

EXPLANATION OF PRINCIPLE

The principle is this: The jelly bean plant, resenting as it does the presence in its sap of such large quantities of pectin, tries to force the foreign matter out by exudations from the beans. But meanwhile the fruit bud has got in its work and the flavor is fixed. The natural jelling tendency of the jelly bean, combined with the action of the pectin, results in the formation of almost unbelievable quantities of deliciously-flavored jelly, ready for the table, which is constantly exuded from the pods in large, crystal-clear drops.

The harvesting of the crop, therefore, is simplicity itself. All that is necessary is to place a sterilized glass or other container of the desired size beneath each plant in such a position as to catch the drops of jelly, which are received in a special strainer and so conveyed into the glass without the touch of human hands. The jelly soon "jells" upon exposure to the light.

The glasses must be gathered daily during the height of the season, but except for sealing and packing, there is no other labor involved.

This wonderful discovery is given to the world through the columns of ORCHARD and FARM exclusively, without expectation of material reward and with the hope that sufficient interest will be aroused to develop the industry upon a commercial scale. — Adam Phule.

[Next month Mr. Phule will describe the results of his experiments with tortilla vines and tamale bushes. Watch for this big feature.—Ed.]

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with paint or varnish—We tell how

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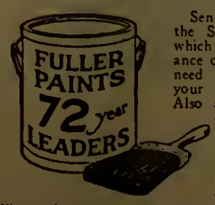

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"Bob" Jones' Corner

Little Stories of Farming

By Robert E. Jones

CONTRIBUTING EDITOR OF ORCHARD AND FARM

What the Census Shows—Probing into the Federal census for 1920 a few days ago, I secured some light on California's agricultural supremacy. You know the recent slump did not hurt this State as it did so many others the country over, as evidenced by the fact that California for 1920 ranked fourth in value of agricultural products as against sixteenth before the "slump." California specialties held up, while the staples declined. In probing the census I was trying to learn the difference in gross money return per acre between land planted to cereals and that planted to the California specialties. This is what I found:

Robert E. Jones

CROP	MONEY VALUE PER ACRE
Cereals	$ 40.87
Hay and Forage	43.64
Vegetables	226.10
Fruits and Nuts	316.49

The moral, of course, is that one acre of California irrigated land will produce as much in money wealth as from five to eight acres of land adapted only to dry farming. It begins to look as if California, all under irrigation, would be several times as large, in wealth-producing potentialities, as a country or State dependent only on dry farming, even though its area were equal.

Eugene Grubb—'Gene Grubb is one of the most unique and lovable characters in American agriculture. Tired of the rigors of a less friendly clime he has come to the Pacific Coast and now makes California his home. He has a prune orchard near Princeton, Glenn County. Grubb is known all over the United States as "Potato Grubb," for the reason that he is an expert on potatoes. He has a book on the subject, written in conjunction with W. S. Guilford, after he had made an investigation in various parts of the world for the Federal Department of Agriculture. In Colorado, Grubb demonstrated the practicability of his potato theories by growing tubers of exceptionally fine quality. But he is not alone an authority on potatoes; he is known widely among livestock breeders throughout this country and Canada. Grubb spends his leisure time now traveling about the State helping the farmers with their problems. This has been his life work and he cannot get away from it. Life to him is helping and advising with the other fellow.

Pocket Money From Berries—Strawberries provide California with pocket money to the amount of $2,500,000 annually. Strawberry growing began in this State in the early '50s and has advanced until now the crop is grown on 3400 acres of land in San Mateo, Alameda, Santa Cruz, San Benito, Santa Clara, Monterey, Los Angeles, Imperial, Fresno and Sacramento Counties. The Florin district of Sacramento last season produced strawberries on 700 acres, Los Angeles County had about 1100 acres and the central counties, approximately 1200 acres. Strawberries reach market in advance of the tree fruits in spring and many car loads are shipped to the Pacific Northwest.

Next Year's Fruit Crop—Wilmer Seig, Sales Manager of the California Fruit Distributors, predicts a deciduous fruit crop next season of 50,000 carloads, with a selling value of approximately $100,000,000. These figures cover only fresh deciduous fruits shipped to Eastern markets in the fresh state.

From the Bottom Up—George F. Maddock, who recently retired as General Manager of the Sutter Basin Company, has been a big factor in California farming for the last seven years, during which Sutter Basin has been under development. When Editor Knollin wrote regarding Sutter Basin that "engineers have a way of turning nature topsy-turvy" he was paying an indirect tribute to Maddock and his great work. Maddock is a man of real achievement and his story is of a poor boy who struggled for an education and won the right to tackle and carry through a big job. When he was 21 years of age, Maddock was a married man with a mechanical trade. He was a linotype machinist and did not have a high school education. Despite the financial responsibility of a wife and child he prepared himself to enter college under a special tutor, paying the expense as well as his family living out of his wages. The preparation required nearly a year. Then he went to Stanford University, got a job and entered college to take the engineering course. Still with his wife and family to support, he made his way through college and was graduated in engineering, emerging from the years of hard work and study not a cent in debt and with the education and determination to carry him farther. This is just a sketch of the man's life, but it will give some idea of the sort of stuff required of a man to make good in a big way. The personal history of all men who have achieved something worth while is pretty much the same. Hard work, intelligently applied, leads to big things.

To Dry Clings—Through the efforts of the California Canning Peach Growers, effort is being made to work out a method of drying cling peaches. This variety of peaches heretofore has been used exclusively for canning, except for the sale of some few on the market. If the drying method succeeds the canning peach grower will have a second outlet for his fruit.

The Big Settlement Plan—Through the agency of Dr. Elwood Mead, the authority on land settlement, there was launched in San Francisco recently a movement of great interest to rural California. The press dispatch describes it as "a campaign to finance a project to colonize 1,000,000 acres of irrigable land in the Sacramento and San Joaquin Valleys." The meeting was held under the auspices of the California Development Board with William Sproul, President of the Southern Pacific Railroad, and George C. Kreutzer, Superintendent of the State Land Settlement at Durham, Butte County, as well as Dr. Mead, as speakers. Co-operating with Dr. Mead the Association is intensely interested in an investigation of lands in California now available for settlement. California has gained a great deal of valuable experience in land colonization through the colonies at Durham and Delhi and the proposal now is that this experience shall be put to good use in peopling the State's available lands.

Keeping Away Protected Pests—Farmers sometimes resort to odd devices when game laws protect birds and animals that make raids on their crops. In the Sacramento Valley during rice harvest, before the duck season is "open," the practice of using airplanes to frighten the ducks away from rice has become quite common. Some farmers have used bombs and others have disregarded the law. But the most curious method is employed by a strawberry grower on Vancouver Island, near Victoria. His pest is the Chinese pheasants, which were introduced into the Northwest many years ago. They raid his strawberries, but the law does not permit him to shoot them. Therefore this farmer soaks

wheat in whisky. The birds eat the wheat and get drunk. Then he catches them. The story does not say what becomes of the birds after they are caught—nor where he gets the whisky!

Fruit in a Back Yard—Dr. E. M. Wilder of Sacramento, a member of the City Council and a physician and surgeon, has a hobby. It is fruit trees. His back yard, in the City of Sacramento, 40x60 feet in size, produces fifty-five varieties of fruit, including an orange and a grape fruit tree. This is accomplished by the growing of many different kinds of fruit on one tree. For instance, he has a cherry tree onto which have been grafted six varieties besides the kind produced by the original tree. The top of this tree has been grafted to Japanese flowering cherries, so that Mrs. Wilder has flowers for the table. On six plum trees, Dr. Wilder has thirty-two varieties of the fruit, which is nearly all the kinds of plums to be found in California catalogues.

Weldon

(Continued From Page 8)

ment of low, fruiting branches under the long than under the short system of pruning.

It is contended also by some that small-sized and inferior fruit results from long pruning. No doubt it is true that trees pruned long have set so much fruit as to require heavy thinning. When this operation is neglected the sizes of course, will be small and thus the fruit may be inferior.

But present indications are that much heavier production results from long than from short pruning, and while breakage in some cases has been severe, this can be overcome by careful attention to heading the tree while it is young, and to the annual pruning in later years.

Lime-Sulphur Spraying Season is Approaching

SOME months ago the attention of ORCHARD and FARM readers was called to the results of an experiment in the use of dry and liquid lime-sulphur preparations in the control of curl-leaf of the peach.

These results lead to the conclusion that either form of the material may be used with good success in combatting this disease.

While most orchardists prefer to buy either the dry or liquid material already prepared, it is sometimes possible to make a saving by boiling it at home according to the following formula and directions.

Stone lime	60 pounds
Sulphur	60 pounds
Water	200 gallons

Bring about 50 gallons of water to a boil in some suitable vessel, or at least use a sufficient amount for slaking 60 pounds of lime. Add the sulphur and mix as well as possible with the water. When the water is hot carefully put in the lime, which will slack almost instantly with the generation of a great amount of heat.

MUST BOIL THOROUGHLY

This is desirable, as it helps effect a combination of the lime and sulphur immediately. The mixture must be boiled for at least 45 minutes. When finished, the liquid is a bright red color, often turning olive green upon further boiling.

Dilute with a sufficient quantity of water to make 200 gallons of spray. More lime may be used if desired, and has the advantage of showing up very white when applied to the trees thus aiding as a white wash.

A VALUABLE ALLY

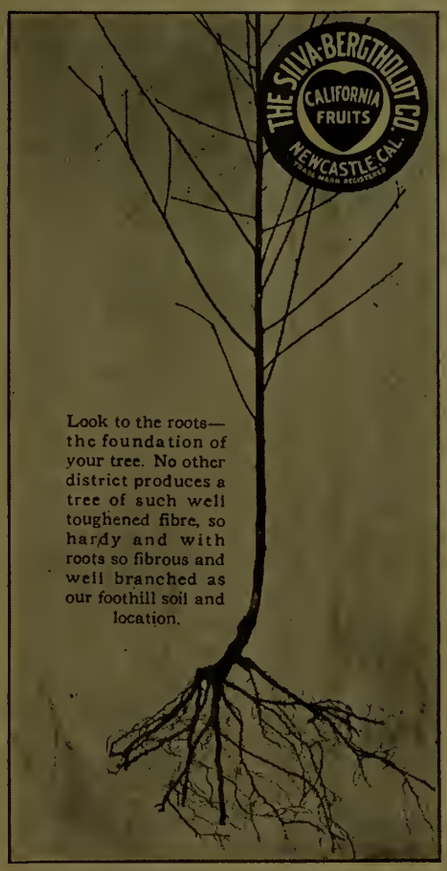
When carefully prepared, this spray is one of the most valuable the fruit grower can make. Perhaps the greatest objection to it is found in the fact that operators may be careless in weighing the material or in boiling it a sufficient length of time in which case results may not be good.

A little common sense and care in preparation will overcome this objection, assuring the grower of a valuable insecticide nad fungicide.—G. P. W.

Each Issue Full of Interest—"Kindly renew my subscription to ORCHARD and FARM. Your magazine has contained so many interesting articles the past year that I wish to continue it without missing any numbers."—George Duren, Berkeley, Cal.

"We find your magazine very helpful."—Convent of the Sacred Heart, Menlo Park.

Plant an Orchard



Write us for complete copies of the announcements of the "Bergtholdt Plan." This plan is a vital issue to every fruit grower—to all California. It means your success and ours in fruit growing. The responsibility for this plan is upon every individual fruit grower — boost for it.

Growing fruit is the best paying business in California.

The acid test of any business is not what it will do under favorable conditions, but what it will do under adverse conditions.

Even under this year's depreciated values, the orchardist with a block of **Prunes, Bartlett Pears, Apricots, Cherries, Raisins, Shipping Grapes, Clingstone Peaches, Drying Peaches, Fall Pears, Almonds, Shipping Peaches, Shipping Plums, Canning Plums,** and **Figs** will make more money than the grower of grain, hay, alfalfa, beans, rice or the dairyman.

Every acre of land adapted to fruit growing that you now employ in growing grain, hay and other crops, is too valuable for fruit to be employed as you are now doing.

Every year that you grow these other crops instead of planting your acreage to orchard, represents not only a dead loss in money, but more than that, one year's loss of life's opportunities.

The trees you plant now will, five or six years hence, assure your share in the profits inherent to the California fruit grower.

We offer for your planting the most complete assortment of commercial fruit varieties.

Our trees are the best that care in propagation and efficient workmanship can produce.

Our catalogue, full of accurate practical horticultural information and suggestions, and our thirty years' experience in fruit growing, and fruit marketing, are at your service for the asking.

Submit us a list of your tree wants for quotation while the varieties you desire are still available in our foothill grown stock.

Write me today.

J. E. Bergtholdt
Sec. and Mgr.

Member of the Bud Selection Association of California

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Tells how to pick out Good Cows

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This 84-page book is worth its weight in gold. Its author, Hugh G. Van Pelt, a prominent dairy editor and former professor of dairying, is a practical dairyman and one of the best judges of dairy cattle in the country. It is so plain and simple that any one can use it as a guide in selecting good cows, and building up a herd for large and profitable production.

We will gladly send you this book free of charge if you will fill out the blank below and send us the names of five people who will need cream separators or milking machines within a year's time.

Any one who is wasting cream by using an old, worn-out or "balky" separator, or by hand skimming, needs a De Laval Separator. Any one who is milking ten or more cows by hand needs a De Laval Milker.

If you cannot give five names, we will send you this book on receipt of 20 cents.

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Please send me Van Pelts Cow Demonstration Book, for which I am sending you the names of five people who need De Laval Cream Separators or Milkers. (Include your own name if you need a separator or milker.) 80

Name_____ P.O._____ R.F.D._____ State_____

NOTE—After each name, in last column, mark S if person needs a separator, M for milker, SM for both.

NAME	P.O.	R.F.D.	State	No. Milk Cows	Prospect For
1.					
2.					
3.					
4.					
5.					

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General stock of deciduous and citrus fruit bearing trees, ornamentals, vines and roses.

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Calkins No Longer Fears the Calving Period

Every cow-owner knows the strain of calving on a cow's system. Kow-Kare is so widely used by dairymen before and after calf-birth to strengthen the genital organs and avoid disorders, that we receive yearly thousands of letters from grateful usors. G. H. Calkins, Ione, Oregon, writes:

"I have a fine Jersey cow. When two years old she dropped twins; they came dead. She didn't clean and four days after I tried to take the afterbirth but could not. I got an experienced man and he tried and failed, and then I began giving her Kow-Kare and in about fourteen days it came away all right and she has not seen a sick day since."

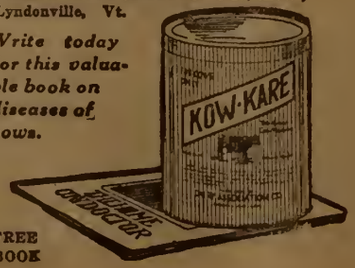
Kow-Kare is equally sure as a remedy for Barrenness, Abortion, Scouring, Bunches, Milk Fever, Loss of Appetite, etc. All of these ailments result from sluggish genital or digestive organs. It is these organs that Kow-Kare is quick to strengthen and build up.

At a cost of only a penny a day, Kow-Kare is used in many of the best dairies to offset the severe strain of winter confinement and rough or concentrated feeds. This aid to digestion and assimilation keeps milk production at top notch and avoids breakdowns.

Kow-Kare will help you to bigger dairy profits; try it. General stores, feed dealers and druggists sell it at the new reduced prices —65c and $1.25

DAIRY ASSOCIATION CO., INC., Lyndonville, Vt.

Write today for this valuable book on diseases of cows.



FREE BOOK

Co-operative Livestock Marketing in California

By M. A. W. Lee

MANAGER LIVESTOCK DEPARTMENT, CALIFORNIA FARM BUREAU EXCHANGE

CALIFORNIA is recognized all over the world as the leading center of co-operative marketing. Yet other States are far ahead of California in marketing livestock.

M. A. W. Lee

They carry out this work through co-operative livestock shipping associations. The work is believed to have started in Alamakee County, Iowa, in 1904. It has spread to other States; at first slowly, but recently quite rapidly. Up to 1917 there were but 700 such associations in the United States. Now there are more than that number in the State of Iowa alone. These associations in that State marketed during the year 1920, a total of practically 50,000 carloads, or $103,837,000 worth of livestock. This was 27½ per cent of all the livestock marketed in that State. Similar conditions exist in other Midwestern States.

These associations rapidly are eliminating the local buyer. *They are saving their members at least 35c per 100 lbs. on the average. This means about $55.00 per car.* The saving of course is much greater for the man who has less than a carload lot, for he has been absolutely at the mercy of the local buyer. Oftentimes, in fact, he has received but one-half what his stuff was worth.

WE NEED ACTION

There is need for better marketing conditions affecting all classes of livestock in this State. So far the movement has been carried out only in a small way. Notable along this line however, are the co-operative creameries and milk producers' associations, the hog auction sales conducted in seven counties of the San Joaquin Valley by the California Farm Bureau Marketing Association, and shipments of lambs to Eastern markets by the sheepmen of the Imperial Valley.

However, for the most part, our livestock men market their stock in the same old way, each man for himself, and "the Devil take the hindmost." The California Cattlemen's Association during the past few months, through its weekly market news letters, has tended to alleviate this condition by keeping the cattlemen posted on market conditions. This helps one branch of our immense livestock industry.

THE PRESENT SYSTEM

Still, at present, practically every town in the State has one or more men who act as "spotters" for the buyers from the large slaughtering establishments. For informing these buyers of the location of stock which is for sale, these men receive from $10 to $25 per car. These same men act as speculative shippers, buying stock at as low a figure as possible, assembling it in car lots and shipping to larger markets.

Owing to unfavorable shipping conditions, length of time required, and high cost, shipment to Eastern markets has been attractive to but a few of our livestock men.

Representative of existing conditions is this account of a typical transaction: A buyer went to a ranch where ten bags of wool were for sale. It was year's staple, fine wool, worth at that time 16c per lb. on the farm. The following is part of the conversation which took place:

Buyer: "At what price are you holding this wool?"

Farmer: "I don't know. What is it worth?"

Buyer: "I can't buy it from you and sell it for you at the same time."

Farmer: "Well, I'd hate to take less than 10c per lb."

Buyer: Will you take that?"

Farmer: "Yes."

In this case the farmer received but 60 per cent of the value of his product.

Every Livestock Man Should Read This

IS CALIFORNIA — recognized leader in co-operative marketing — to take a back seat when it comes to handling livestock? Not if we know it! Yet the Corn Belt has a big lead over us in this respect, and it is up to the California stockmen to get behind the local movement. The money now paid in tribute to "spotters" and speculators might as well remain in the growers' pockets. Mr. Lee tells why and how.—Ed.

DEFINITE ACCOMPLISHMENTS

During the past year a movement started in the fall of 1919, has crystallized into a working organization, that should, within a comparatively short time, reduce to a minimum the recurrence of such transactions in this Staate.

When the California Farm Bureau Federation of County Farm Bureaus was organized in the fall of 1919, a marketing committee, with Mr. J. A. Teagarden of Auburn as Chairman, was appointed. At the annual meeting of the Federation in the fall of 1920, the report of this committee was accepted. It was authorized to proceed with the formation of County Farm Bureau Exchanges which should federate into a State Exchange, each of these to be incorporated under the laws of this State as a co-operative purchasing and marketing organization.

RAPID PROGRESS MADE

By June 1st of 1921, five County Farm Bureau Exchanges had been organized and federated into the State Exchange. Mr. Fred N. Bigelow, former Secretary of the State Market Commission, was placed in charge as manager. Since that time, growth has been rapid, until at the present writing there are federated with the State Exchange, County Farm Bureau Exchanges in the following fourteen counties:

Tehama	Mendocino
Kings	Santa Cruz
Tulare	Monterey
Del Norte	Glenn
Tri-County*	Alameda
Solano	Santa Barbara

San Joaquin

*Tri-County Exchange includes Stanislaus, Merced and Madera Counties.

Other counties which are forming Exchanges are: Orange, Sacramento and Placer.

Each of the County Exchanges has a County Manager. He carries on the

buying and selling activities of the members, functioning wherever he can effect a saving. Those transactions which must be consummated outside the county are handled through the various departments of the State Exchange.

Neither the County nor State Exchange will function in any transaction involving a commodity now being handled by existing farmers' co-operative organizations.

There are three departments in the State Exchange at present: Purchasing, with Arthur Baker as Chief Purchasing Agent; Grain Dept. with Grant W. Kenney, Manager; and the Livestock Dept. which was organized on October 1st, with M. A. W. Lee (the writer) as Manager.

CENSUS FIGURES QUOTED

Figures taken from the 1920 census give one angle of the problem of marketing the livestock of this State; that is, the great need of assembling into carload lots the surplus stock of small producers. These figures show that there were 117,670 farms in California. Of these 99,661 reported keeping livestock. The average number of acres per farm is 249. Taking only those farms which reported keeping each of the various kinds of livestock and dividing by the total number of each kind, the results are as follows:

On farms reporting keeping beef cattle there were on the average 74 head.
On farms reporting keeping dairy cattle there were on the average 13 head.
On farms reporting keeping sheep there were on the average 334 head.
On farms reporting keeping swine there were on the average 18 head.
On farms reporting keeping poultry there were on the average 116 head.

Although we are accustomed to thinking of our livestock industry as being carried on by a few large sheep and cattle men, these figures give us food for thought.

The California Farm Bureau Exchange is helping livestock producers dispose of their product to better advantage along the following lines:

WORK OF COUNTY MANAGERS

County managers, through committeemen, correspondence and solicitation, locate such stock as is in marketable condition. When the manager has located one or more carloads that will be ready by a certain date, he notifies the State Exchange. The wants of farmers for various kinds of livestock likewise are ascertained, the State Exchange keeping a record of all of these.

The plan under which the Livestock Department is operating in handling the different classes of livestock is as follows:

Feeder Cattle, Feeder Hogs, Feeder Sheep, Fresh Dairy Cows and Springers, Breeding stock of all kinds are shipped directly from the farmers having the stock for sale to the farmer wanting the stock.

Beef cattle, market hogs and sheep ready for market are sold directly to representatives of slaughtering establishments or packers.

Cull dairy cows go direct to slaughtering establishments or packers, subject to inspection.

Veal calves are dressed by members or employes of County Farm Bureau Exchanges and shipped to the larger cities where representatives of the State Exchange sell the carcasses direct to retailers.

Live poultry, pigeons, geese and ducks are sold to feeding establishments. Dressed turkeys and rabbits are sold direct to retailers.

CO-ORDINATION IN HOG SALES

The department is planning to co-ordinate the hog auction sales in the Sacramento Valley along the same lines that they are handled in the San Joaquin by the California Farm Bureau Marketing Association.

Arrangements already are under way to assist the sheep men with the marketing of lambs in Eastern markets next spring. Sheep men will be kept advised as to market requirements and conditions and will be assisted in arrangements for through trains for lambs only. Receipt of dairy market information will make it possible to direct shipments to best markets while dairy cows are en route.

Plans are under way for co-operation with the producer-owned and operated commission houses which the American Farm Bureau Federation Livestock Committee expects to establish in the 10 principal markets in the United States. Shipments of stock East, in all probability, will be sold through these.

From this it will be seen that a comprehensive plan has been worked out whereby the producer of a few head, which is the average in California, according to the figures quoted above, may sell to the same advantage as the "big fellow" and the "big fellow" in turn will be assisted in reaching the best possible market at the least cost.

Being a co-operative organization, the Livestock Department of the California Farm Bureau Exchange has for its object to serve the livestock interests of this State in every possible way. Charges for the service will be kept at a minimum and any profit which accrues will go back to the members in the proportion of the volume of business each transacts, to the total volume of business transacted by the Livestock Department.

An Open Letter

TO ALL PRESENT AND PROSPECTIVE TRACTOR USERS:

We are conducting a series of PUBLIC DEMONSTRATIONS of TIOGA STRENGTH TESTED TRACTORS in sub-soiling, discing, plowing, etc., and various kinds of belt work. These demonstrations will be held in all the principal communities in Southern California, and we want you to make it a point to attend at least one of them.

You, as a Tractor User in California, know that it requires the best quality of material and workmanship in a tractor to do your work efficiently day in and day out without continual grief.

TIOGA STRENGTH TESTED TRACTORS are built on this basis.

Tioga Tractors have been in operation in California for approximately three years and Tioga owners are always pleased to go out of their way to tell anyone the real service the Tioga has given them.

The Tioga Tractor will solve your tractor problem, no matter what size farm or orchard you may operate.

THE TIOGA TRACTOR COMPANY

W E Devlin

General Sales Manager.

P.S. Ask The Tioga Tractor Sales Company, 1957 So. Los Angeles St., Los Angeles, Calif., when and where there will be a demonstration near you.

TIOGA STRENGTH TESTED

TIOGA
STRENGTH TESTED
TRACTORS

Farms for Fighters

(Continued From Page 5)

under way by the time the bonds were voted by the people.

If adopted by the people, the $10,000,000 bond issue will become available to the Veterans' Welfare Board in the purchase of farms or homes for former service men. It will become a loan by the State of California to men who richly merit it, and the property these men purchase will be the security. Since the $10,000,000 is to go into a revolving fund, every dollar, in fifty years, will have been returned to the State treasury with 4 per cent interest.

FLOOD OF APPLICATIONS

If the men and women of California could see as I, their Governor, have seen, the flood of applications from thousands of our veterans seeking farms and homes through State aid, there would be no doubt of their action on the bond issue when it comes before them at the November election. The adoption of that bond issue is the one means of making effective the provisions of the Farm and Home Purchase Act and the Land Settlement Act. During the war and since, I have been endeavoring to aid our veterans, and I continue now, feeling that it is a sacred duty to place before our voters the reasons why they should authorize these bonds.

To do otherwise than vote the bonds would be to counteract the benefits of all California's veteran legislation and to deny our obligations to the men and women who served us in time of war. I know that every voter in California is aware of the need of our veterans and of the incalculable debt we owe them, and it is with this assurance that the people will be called upon to vote for veteran legislation in November of this year. Our veterans must guide the future destinies of this State and Nation, and we can not now turn a deaf ear to their appeals, when justice demands that we assist them to a means of independent livelihood and pre-war prosperity.

SALE OF

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Don't miss this amazing bargain! Only a few of these stunning style, fine quality Serge Dresses to go at this sensationally low price. Fashioned from extra quality Serge; always looks nice and gives excellent wear. Beautifully designed stitched wool embroidery in two harmonizing colors—will not pull out or run. 2 novelty pockets; self material sash belt; full length sleeves.

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So sure are we that you will say this is the most wonderful bargain you ever saw, we send it without one penny in advance. Just your request brings this charming dress. But don't delay—they will go fast—get latter into the first mail. Color: Navy blue only. Sizes: Women's sizes, 32 to 46 bust; Misses' sizes, 14 to 18. STATE SIZE.

Money Back Guaranteed

ACT NOW!

Send no money now—pay only $3.88 and postage on arrival. Your money back quick if you want it.

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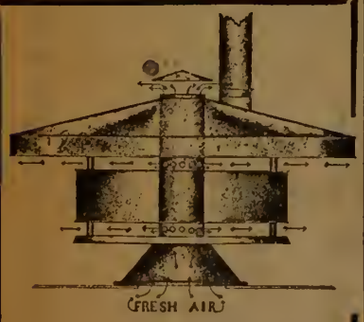
Please send me quick Bargain Serge Dress. Will pay postman $3.88 and postage on arrival. If not delighted you will refund my money.

Name.....Size.....
Address.....
City.....State.....



If you are going to BROOD anywhere from 200 to 1500 BABY CHICKS and would like to have a SYSTEM that will furnish all the WARM, FRESH AIR required, no matter what the climatic conditions may be, write us for our LITERATURE on KRESKY STOVES. Ask for Literature No. 66, which describes all sizes.

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PETALUMA, CALIF.

COPPER OIL CANS LAST A LIFE TIME IDEAL FOR GARAGES
Circular Free
STANDARD METAL WORKS
6 BEACH ST BOSTON, MASS.

CONSERVATION AND DEVELOP

The Golf Fiend is interested indirectly in irrigation. Here is shown a Skinner system as used on a golf course.

Model Testing Plant

With the equipment shown above and to the right, the Johnston Pump Co. of Los Angeles tests irrigation equipment in order to eliminate guesswork.

Direct Connection of electric motor to L. and B. pump on Cajay Rancho, California.

A Private Waterfall—It is said Nature cannot be improved upon, but this miniature cataract in the Fontana Ranch irrigating system is much "easier to look at" than the formerly arid slope it occupies!

Not All Dams are stationary. Here's the Calco adjustable type that takes the place of the canvas dam used by many ditch irrigators.

Mother Nature, however, is most beautiful of all! Witness this typical mountain stream in the High Sierras, source of both power and irrigating water. Thousands of valley acres still await the magic touch of mountain water.

Human Engines do much of the irrigating work in the Far East. These coolies collect the princely stipend of 6 cents a day for operating a treadmill!

This Big Fel[illegible] of 250 feet. [illegible] pany near [illegible]

T OF OUR WATER RESOUCES

The Works of Man may be insignificant, but the sight of a great irrigation canal, under perfect control, in a formerly arid country, is an inspiring one. Portland cement has played an important part in the reclamation of the West.

Concrete Pipe — Thousands of acres of California orchards are irrigated by the underground systems which conserve water and leave the surface free of ditches.

The Citrus Growers have developed orchard irrigation to the highest degree. Typical cement-pipe installation, showing how water is distributed.

A Combination of ditch and pipe irrigation is shown above. The streams are regulated through openings in the metal surface pipe, connected with the cement stand-pipe at the center.

Metal Headgates made of rust-resisting iron are taking the place of clumsy wooden structures in many modern systems. This is the Calco radial type familiar throughout Pacific Coast sections.

[illegible] against a total head of 265 feet and is set to a depth [illegible] & [illegible] Corporation on the ranch of the Italian Vineyard Com- [illegible] to have increased the production enormously.

Definite Knowledge of the amount of water passing through a weir, pipe or headgate is made possible by the use of this hydrometer, or irrigation meter, produced by the Randall Corporation.

Let Me Send You FREE on trial a Pair of Handsome Tortoise Shell Glasses

For many years people have been coming to me from every part of Chicago, on account of my wide reputation for supplying glasses that fit. I am now offering the benefit of this wide experience to people everywhere. No matter where you live, I positively guarantee to give you a perfect fit or there will be no charge whatever. I promise to send you a pair of glasses that will enable you to see perfectly and satisfy you in every way, or you will owe me nothing. They will protect your eyes, preventing eye strain and headache. They will enable you to read fine print and thread a small eyed needle, see far or near.

SEND NO MONEY

I will not accept a single penny of your money until you are satisfied and tell me so. If your eyes are diseased see an oculist, otherwise let me fit you with the right glasses and give you perfect eyesight. Simply fill in and mail the coupon below giving me the simple easy information I ask for and I will send you a pair of my Extra Large Tortoise Shell Spectacles, for you to wear, examine and inspect, for ten days, in your own home. The glasses I send are not to be compared with any you have ever seen advertised. They are equal to spectacles being sold at retail at several times this price. You will find them so scientifically ground as to enable you to see far or near, do the finest kind of work or read the very smallest print. These Extra Large Size Lenses, with Tortoise Shell Rims, are very becoming and your friends are sure to compliment you on your improved appearance. There are no "ifs" or "ands" about my liberal offer. I trust you absolutely. You are the sole judge. If they do not give you more real satisfaction than any glasses you have ever worn, you are not out a single penny. I ask you, could any offer be fairer?

SPECIAL THIS MONTH

If you send your order at once I will make you a present of a handsome Velveteen Lined, Spring Back, Pocket Book Spectacle Case which you will be proud to own. Sign and mail the coupon NOW. Dr. Ritholz, Madison & Laflin Sts., Station C, Chicago, Ill., Doctor of Optics, Member American Optical Association, Illinois State Society of Optometrists, Graduate Illinois College of Ophthalmology and Otology, Famous Eye Strain Specialist.

Accept This Free Offer Today

Dr. Ritholz, Madison & Laflin Sts., Station C, Chicago, Ill. DR 816

You may send me by prepaid parcel post a pair of your Extra Large Tortoise Shell Gold Filled Spectacles and Automatic Test Chart which I can keep free of charge. I will wear the glasses 10 days and if convinced that they are worth several times the price I will send you $1.49. Otherwise I will return them and there will be no charge.

Hold old are you?.....

How many years have you used glasses (if any).....

Name .....

Post Office .....

R. R. ..... Box No. .....

State .....

LIVER PILLS

Dr. E. E. Paddock, Specialist, of Kansas City, Mo., has distributed free over 100,000 copies of a booklet on cause and treatment of constipation, indigestion, bilious colic, jaundice, gas and inflammation of the Gall Bladder and Bile Ducts as associated with Gallstones. Just send name today for this Free Book to Dr. E. E. Paddock, Box OH-201, Kansas City, Mo.

Get Them When They're Young

Right Now—during the fall and winter months is the time to start the work on brown rot of the apricot and other deciduous pests. Young scales are easily killed. When they reach maturity they are harder to control.

So spray now with these reliable Universal Orchard Sprays—yes, before the rains begin.

ORCHARD BRAND

B. T. S. (dry barium sulphur) . . . . 40-50 lbs.
or Bordeaux Paste . . . . . 36-40 lbs. } 200 gal. tank
or Bordeaux Powder . . . . . 18-20 lbs.

These are for Scale

Dormant Soluble Oil . . . . . 14-15 gals. per 200 gal. tank
or Crude Oil Emulsion . . . . . 18-20 gals. per 200 gal. tank

These are made by experts from the finest materials mixed according to formulas proved best for Northern California needs. Universal Orchard Sprays stimulate trees and vines, kill the eggs of destructive insects and remove moss and lichens.

Our entomologist, Paul R. Jones, in San Francisco, or Frank B. Herbert, our assistant entomologist at Los Gatos, will tell you just what to use and how to use it. No charge. Send for our new paper on brown rot control.

Insecticide Department

BALFOUR, GUTHRIE & CO.

Balfour Building San Francisco, Cal.

Bert Kay's Poultry Pointers

THE longer we who call ourselves poultrymen, remain in the egg-producing business, it seems, the more there is to learn.

And I find as we advance that some men who came into the game 10 to 15 years later than we "old-timers," learn as much as we have learned in some cases, all our lives. It must be because we have shown them the way, with our years of experience, and they have the good common sense to take advantage of our knowledge. I dare say that is the reason the poultry game is so fascinating. The more I find out, the more anxious am I to learn more.

"HELP ONE ANOTHER"

According to my neighbors, I am considered an "expert," and I have always been willing to impart what knowledge I possess. Perhaps it is because I've never wanted to see the other fellow go wrong. I have always believed that if my neighbor's flock falls sick or is neglected, or if his methods are poor, it has a demoralizing effect upon the whole industry.

After all, if we are able to advance, or dignify the industry, we should all co-operate to this end.

There is plenty of work in raising chickens and making them produce more eggs, but is there anything that doesn't require close attention and labor in order to achieve success? The more you mix those two factors with the proper amount of brains, muscle and common sense, the greater will be the return on your investment.

MANY EGGS IN SLACK SEASON

It is taking me some time to come down to the matter of what I do to make a success of egg-production, but first I am trying to get better acquainted with my readers.

Like every poultryman who must work for greater profits, I make it a rule to buy my chicks from the hatchery at a time in spring that I think will give me layers when the older hens are moulting.

Then, instead of "laying off," as Nature intended they should at that time of the year, the pullets are just beginning to lay.

And to my mind that is the time to make them lay—when eggs are higher. During October, 1920, I had 3300 layers that netted me $650 and in November $785.

Last year in October my net return with 3700 pullets and hens was $805, and for November $785 net.

I had one man help me during October, but in November my wife and I did all the work.

There is nothing to prevent any one from doing the same. And there is no mystery about it either.

Folks, We Want You to Meet Bert Kay

BERT KAY lives at Petaluma, the greatest poultry section in the world. For 17 years he has been raising chickens and advising his neighbors.

Mr. Kay talks with us and not to us. He will lend a helping hand to ORCHARD and FARM subscribers, and not only will write in his chatty way about different aspects of the industry, but will answer questions as well. Watch for further contributions from Mr. Kay.—Editor.

Feeding Methods

FIRST I will tell you about my feeding methods.

In the morning I give a wet mash consisting of wheat, mixed feed and screenings, with a prepared milk (ten to one); a good proportion of chopped green barley, meat scrap and low-grade flour; a small proportion of charcoal.

All of this is mixed with the "ten-in-one." The "mixed feed" consists of screenings not to exceed 8 per cent, wheat bran 58.17 per cent, wheat shorts, 15.62 per cent, crude fat, 4.05 per cent, crude fiber, 8.55 per cent and the balance wheat.

In the afternoon I feed them enough green feed (green barley) to satisfy the flock in each yard, consisting of about one thousand chickens.

One hour later I feed a dry mixture of one-half milo maize, one-quarter wheat and one-quarter paddy rice. This completes their feed for the day. About twice a week I throw wheat on the floors of the houses in the straw litter, to make them scratch. This they do when they are kept inside and when I wake them up in the morning by turning on the electric lights.

Of course there are some that do not feed as I do, and still get wonderful results. In fact I have never seen a district that has as many different methods of feeding as Petaluma, and at the same time got such splendid results. It may be that this has made the success of this district. The different methods are carried out with one objective—greater yields.

Egg Laying Contests

TO MY mind the most valuable egg laying contest that I have seen in this whole United States is the one conducted by the Sonoma County Farm Bureau Poultry Department. It is run just as a poultryman would run it on his own farm, and therein lies its success and efficacy.

It is so managed that any one who intends to go into the business, or who has had little experience, can learn from it. Although the methods of feeding are different than mine, I have nothing to say against them, because they are getting results.

In fact, "per hen," they are getting more, perhaps, than I.

But on the other hand they are trapnesting and culling more carefully, which requires either more labor or a less number of birds. But that again is another question that might involve a long argument. So I will get back to what they are feeding in order that you may better understand how they are getting results with the birds they have in the contest.

Mr. Ecklans, who has charge of the birds, and who made up the feed ration for them, feeds quite differently than many poultrymen. Instead of a wet mash, he feeds dry. In fact, he doesn't believe in a wet mash at all at any time.

Altogether he feeds, or makes up in his mixer, 558 pounds. In the morning he mixes bran, 160 pounds; flour middlings, 90 pounds; ground corn, 130 pounds; ground barley, 60 pounds; fish meal, 50 pounds; beet scrap, 50 pounds; charcoal, 15 pounds; salt, 3 pounds.

In the afternoon is given the green feed (chopped barley) and about 4 p. m. is given the afternoon mixture—180 pounds of wheat; 180 pounds of milo maize; 180 pounds cracked corn, and 180 pounds of barley.

New Experimental Station

ANOTHER splendid step that is advancing the poultry industry of Central California is the construction of an Experimental Station and research laboratory near the big hatcheries on Sixth and F streets, Petaluma.

The space occupied will be 190 feet square with the laboratory in the center, surrounded by small pens where will be located the different experimental carriers of disease that chickens (like humans) fall heir to. And all will be run on the strictest sanitary basis.

The research work in the laboratory has been going on for some time in Petaluma. The work has proved so successful that the Department of Agriculture of the University of California has decided on making a per-

Motor Troubles Ended

New Invention Creates Wonderful Spark—Doubles Power, Makes Winter Starting Easy, Stops Oil Pumping, Eliminates Carbon, Saves Gas— Free Trial Offer.

Any car owner who is bothered with a motor which pumps oil, foul spark plugs, wastes gas or carbonizes badly can stop these troubles by using a remarkable device called Warren Transformers, perfected by W. H. Warren, a Kansas City motor expert.

In two minutes a boy can attach Warren Transformers. Then you will be amazed to see your car go whizzing up hills on high where you formerly had to shift gears. You will also notice a big increase in your mileage and instant starting in coldest weather. Spark plugs that formerly fouled and cylinders that pumped oil will be clean and dry and fire with full power.

If you want to save 25% to 50% on fuel and repair bills, be rid of missing cylinders, dirty plugs and carbon, have a quick start in coldest weather and pep on hills, write the Warren Mfg. Co., 263 Gateway Station, Kansas City, Mo., and a set of Warren Transformers will be sent immediately, with the understanding that they do not cost you a cent if not entirely satisfactory.

So confident is the Warren Mfg. Co., that Warren Transformers will more than delight you that they offer to send a $4 set for only $2. This is a special introductory offer, good for only a few days, and readers should take advantage of it immediately.

Send No Money with your order—just your name and address, name of car and number of cylinders. Warren Transformers will be sent immediately. When they arrive merely pay the postman $2 and postage. Use them 10 days. If not satisfactory return and your money will be refunded. Write today and end your motor troubles. This offer is fully guaranteed.—Advertisement.

The Cause of White Diarrhea

White Diarrhea is caused by the bacillus Bacterium Pullorium transmitted through the yolk. There is scarcely a hatch without some infected chicks. The germs multiply very rapidly and one infected chick may infect the entire brood. The germs can be killed by the use of preventives. Intestinal Antiseptics to kill the germs should be given as soon as the chicks are out of the shell. It is much easier to prevent than it is to cure.

How to Prevent White Diarrhea

Dear Sir: I have raised poultry for years and have lost my share of little chicks from White Diarrhea. Finally I learned of Walker's Walko Remedy for this disease, so sent for two 50c packages to the Walker Remedy Co., Dept. 486, Waterloo, Iowa. I raised over 500 chicks and never lost a single one from White Diarrhea. Walko not only prevents White Diarrhea, but it gives the chicks strength and vigor—they develop quicker and feather earlier. I have found this company thoroughly reliable and always get the remedy by return mail. Mrs. L. L. Tam, Burnetts Creek, Ind.

Don't Wait

Don't wait until White Diarrhea gets half or two-thirds your chicks. Don't let it get started. Be prepared. Write today. Let us prove to you that Walko will prevent White Diarrhea. Send 50c for box on our guarantee—money back if not satisfied. Walker Remedy Co., Dept. 486, Waterloo, Iowa.—Advertisement.

manent and still larger experimental station.

About two years ago the Poultry Committee of the Chamber of Commerce of Petaluma, working with several prominent poultrymen of the district and the Sonoma County Farm Bureau, decided that something of an experimental nature was necessary in a community of approximately 6,000,000 chickens. But there was no money available.

To start the fund, the Chamber interested some of the feed dealer members of the organization to pay the salary of an expert manager and arranged with the University of California to supply the laboratory equipment.

Since October, 1921, however, the Department of Agriculture of the University has taken over the entire expense, with Dr. C. D. Carpenter, the Avian Pathologist, in charge. No doubt this is the only community in the country that has such an institution. But where there is a veritable city of hens it is almost compulsory. Think of a city of 6,000,000 people without a doctor!

Chicken Talks

By Bill Brahma

IF YOUR hens fail to lay an egg today, they will not make it up tomorrow by laying two eggs.

A fellow advertises that every hen has a laying capacity of 1000 eggs. But do not keep all your hens until they lay that number. They might die on your hands of old age!

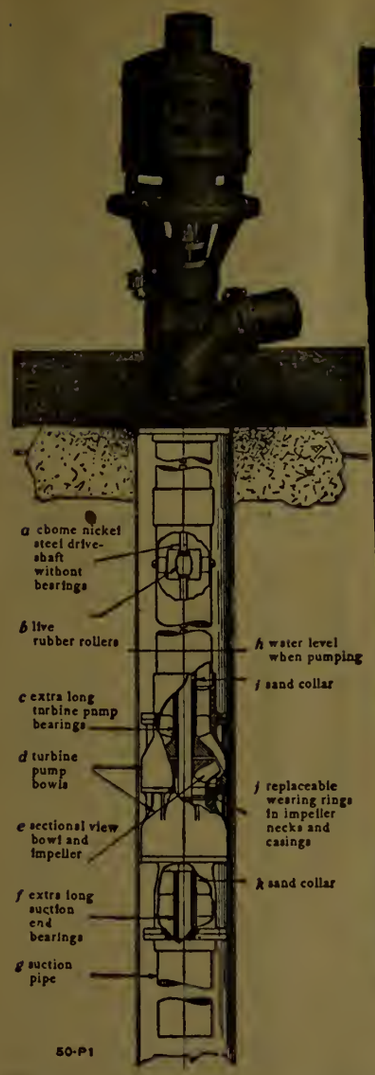
Good strong hens that come from good heavy laying stock and have never had any "setbacks" will be profitable for two laying seasons. Some have more than paid their way for four seasons, but our advice is to sell them after the second laying year. Have young stock coming along to take their places. If you have more than 300 layers, change one third of them each year. This method will enable you to keep your laying stock at the right age.

In Southern California one should complete the hatching of the heavy breeds by March 15th, and the light weights (with which the White Leghorns belong) should be finished up by the first of May. The big baby chick hatcheries keep going as long as the demand lasts, but where one hatches his own chicks these periods are based on the time the different breeds will begin to lay to the best advantage, avoiding the danger of having a slight molt about the time eggs are wanted.

On these rather chilly winter mornings, the drinking water gets cold, especially when the water is kept in jars or other metal containers. Laying hens require considerable water to make their eggs, for as you know, eggs are about 67 per cent water. Hens generally take a drink of water the first thing in the morning but they won't do it if the water is very cold and this is apt to lower the egg production.

Put enough lukewarm water in the jars to take the chill off. This is a little extra work but you will be repaid amply in the increase in eggs.

A few simple remedies should be kept always ready. Most chicken ailments are easy to control if noticed soon enough. If the poultryman observes something wrong with any of the flock and does not know what it is, he should find out if possible the cause of the ailment and its nature. The medicine chest should contain permanganate of potash, carbolated vaseline, peroxide of hydrogen, epsom salts, a few quinine pills, iodine and a medicine dropper.



The NEW Bean Turbine Pump

Here is an entirely new idea in turbine pump construction—new, in the sense that it has not been offered generally to the growers of the state, although during the past year and a half there have been nearly a hundred of them installed in the Santa Clara Valley and elsewhere, and they have surpassed our highest expectations in efficiency, economy, and freedom from trouble.

No Bearings Below the Surface

We have eliminated all the drive shaft bearings below the surface. (Note the diagram.) A radial thrust bearing in the head takes up all end thrust, and operates in an oil bath. Lubrication troubles are unknown because there are no under-surface bearings to lubricate.

Built for 6-Inch Wells and Up

No need to bore a new well, for this new Bean pump is suspended entirely from the top and can be put into your old well, regardless of its size, from six inches up. It can be had direct connected with motor, or for belt drive.

Send for Turbine Pump Bulletin — which tells you more about this improved Turbine pump. Also—ask for our catalog of horizontal pumps, if interested in this type.

BEAN SPRAY PUMP CO.
101 West Julian Street
San Jose, California

Bean Turbine Pumps

WILL RADIUM AT LAST OPEN THE DOOR OF THE GREAT UNKNOWN?

If you are sick and want to Get Well and Keep Well, write for literature that tells How and Why this almost unknown and wonderful new element brings relief to so many sufferers from Constipation, Rheumatism, Sciatica, Gout, Neuritis, Neuralgia, Nervous Prostration, High Blood Pressure and diseases of the Stomach, Heart, Lungs, Liver, Kidneys and other ailments. You wear Degnen's Radio-Active Solar Pad day and night, receiving the Radio-Active Rays continuously into your system, causing a healthy circulation, overcoming sluggishness, throwing off impurities and restoring the tissues and nerves to a normal condition —and the next thing you know you are getting well.

Sold on a test proposition. You are thoroughly satisfied it is helping you before the appliance is yours. Nothing to do but wear it. No trouble or expense, and the most wonderful fact about the appliance is that it is sold so reasonable that it is within the reach of all, both rich and poor.

No matter how bad your ailment, or how long standing, we will be pleased to have you try it at our risk. For full information write today—not tomorrow. Radium Appliance Co., 755 Bradbury Bldg., Los Angeles, Calif.

When Answering Advertisements Please Mention ORCHARD and FARM

BURBANK SEEDS

Are Standards the World Over

Bulletin 61 Is Free to All

Announcing Amaranthus "Molten Fire" and other new creations in Flowers, Vegetables, Grains and Grasses

LUTHER BURBANK
Santa Rosa, Calif., U. S. A.

GLOBE "A1" FEEDS
—Judge them on Business Principles!
FEED FOR SWINE, STOCK AND POULTRY
ASK YOUR DEALER

Brooding Chicks NATURE'S Way

HOT WATER OVERHEAD HEAT — NATURAL HEAT AND PERFECT VENTILATION—NOTE THE CONTENTMENT OF THE CHICKS.

Who Cares for Mother Now?

A Day Scene of 1500 Baby Chicks in one of Sutherland's Perfect Brooders.

For full information write for Catalogue No. 52.

Sutherland's Brooder Works

North Main Street

PETALUMA CALIFORNIA

Turkeys--Their Eggs and Poults

By Marshall A. Stutsman

TURKEYS mate from February first to March 15 and April first, according to the type and age of the hen.

There are two types of turkey hens —one the egg type and the other the meat type. The egg-type hen will lay one clutch of eggs, set and hatch, and begin to lay a second clutch before a meat-type hen begins to lay the first clutch. This egg-type hen is usually a small hen, weighing from ten to twelve pounds.

The meat-type hen is large, weighing from twelve to twenty-five pounds or more. These have the good quality of producing big-boned, large-framed birds—but they also have some undesirable traits, often laying but one clutch of eggs, many of which are soft shelled and perhaps infertile.

When they start to set it is almost impossible to break them up, and if set they are very apt to break the eggs. They are poor mothers, are very clumsy and kill many of the little fellows. We had one which weighed twenty-eight pounds; she proved almost as worthless as an ostrich.

EARLY SELECTION ADVISED

It is well to watch the hens, observe these qualities and mark them in one of the many ways so that you can hold them for your next year's work and thereby raise the flock to the highest point of efficiency.

You will find that many of the hens will "steal" their nests. They retain much of the instinct of the wild.

This should not be permitted, for there is danger of the loss of the hen and the eggs when both are without protection against predatory animals or rainfall. Eggs should be gathered daily. If this is not done they may be lost.

CARE OF TURKEY EGGS

The care of eggs means much toward success. As the eggs are gathered it is advisable to mark and place each one according to some system.

The pen from which the eggs came and the date on which they were laid is a record which is indispensable if you wish to be able to tell after the hatches which turkeys came from a certain tom or hen; and, furthermore, the date enables you to set them in good time. However, when operating on a large scale it is a very wise plan to set them in their turn, to prevent others from getting too old.

An egg table should be constructed, with strips about two inches high all around the outside, and filled with fine, dry sand, sawdust or grain, so that the eggs may be placed on end and turned daily to prevent settling unevenly. Place the eggs in rows so that the oldest may be set first.

The rule of setting the eggs as early as possible is very important, as the moisture inside the egg decreases daily—more especially when they are kept in a warm, dry place. This causes many of the young to die in the shell. On account of insufficient moisture, the shell is hard and the unhatched baby is unable to break it all around and get out.

SETTING TURKEY EGGS

The ground is the proper place to set turkey eggs, as the moisture obtained from the ground during the incubation is very necessary to avoid trouble. Sprinkling the eggs and the interior of the nest on the eleventh, nineteenth and twenty-fifth days is a very good rule.

The nest should be placed in a clean place where it will be undisturbed—and don't forget that it should be protected from rain.

Permit me to cite another cause of loss: setting eggs under lousy or diseased hens.

SETTING THE HENS

Before hens are set they should be dusted with some good louse powder, which is sure to rid the hen of the trouble. We have been very well satisfied with a preparation of our own which is very certain, quick and economical, and which is made as follows:

Naptholene, two cupfuls to three-quarters gallon of Portland cement and one cup of pulverized sulphur.

It might be added that if one puts 25 cents' worth of naptholene in the place where the turkeys dust themselves the job will be well done. If this is not done, then each one must be caught and dusted thoroughly by putting the powder over the entire body of the bird, especially from the vent to the head on both sides of the back. The rest of the bird, however, must be covered, for if this is neglected the lice will go to the parts neglected.

DUSTING FOR LICE

The bird should be held by the legs with one hand and placed upon a piece of newspaper while the dust is applied with the other hand.

Much attention should be given to the care and feed of the setting hen. Let her off the nest daily. See that she has plenty of green feed, as well as grain or mash. Permit her to stay off long enough to exercise, feed and drink—fifteen to twenty minutes; this care will prevent her from getting nervous and perhaps breaking the eggs.

Twenty-eight to thirty days will be necessary for the incubation of the eggs—and when you note that the eggs are "pipped" the hen should not be disturbed till she finishes the hatches. Now is the time, especially, that the hen should be free from lice.

It will not be necessary to feed the little fellows for forty-eight hours, as the yolk of the egg sustains them dur-

AT LAST!

A Spray That Equals Fumigation

After many months of patient labor and grievous disappointments the chemists of a Los Angeles Laboratory have successfully perfected a hydrocarbon oil emulsion spray which combines the effectiveness of fumigation with the economy and ease of spraying. It positively will not injure the most tender growths nor mar the beauty of bud or blossom. It is non-poisonous and non-inflammable, and, what is very important, the component parts of the spray will not separate. The ingredients are of the purest and best and are so combined that the finished product will mix with water in all proportions.

This spray has been aptly named "FUMISPRAY" for this very good reason—for a considerable time after spraying fumes are thrown off which act as effectively as direct contact of the liquid—thus every tiny crevice is FUMISPRAYED!

FUMISPRAY kills by contact and fumes the following parasites—Oyster Shell, San Jose, Purple, Black, Red, Brown, Cottony Cushion, and Scurfy Scales; Green, Black, and Wooly Aphis; Thrips; Red Spider; White Fly, Pear Psylla and other forms of insect life.

FUMISPRAY is the last word in insecticides. Do not confuse it with any other spray on the market. We guarantee you satisfaction. Sold in large or small quantities. Write for prices.

Herbicide Chemical Laboratories
1963 Santee St.,
Los Angeles, Calif.

A Self-Feeder for the Poultry Yard

This is an easily-constructed hopper for grit, shell or mash. It affords protection from the weather and prevents waste. The box is raised off of the ground, so that the contents are dry at all times. The top is covered with heavy roofing paper.

ing that time. Most hens will linger in or close around the nest that length of time, after which they become nervous and want to take the brood out where they can get their natural feed —insects and greens, which comprise 95 per cent of the feed of the wild birds in their natural state.

The little turkey would sustain itself in this manner if the feed was to be had and some of the prowling dangers didn't overtake it before it could fly up to a roost.

This is our method in handling the progeny of the wild turkeys—when the situation will permit it—that is, if the feed is to be had and the danger is absent.

FEED FOR LITTLE TURKEYS

There are about fourteen different feeds for little turkeys; and it is my opinion that they may be raised successfully on almost any one of them.

Many producers give more faith and credit to the feed than to any other one factor, but I do not concur in this opinion. During our early experience we also were slaves to this feed proposition—we steamed it and baked it, chopped it and packed it—barrels of it daily—on our backs to the hundreds of coops—and still they died.

Was it that the feed was not right? No; not that. Perhaps they should have some cottage cheese—yes, that is good; but permit me to tell you that it is not the feed that causes the death of the little fellows. Frequently the feed is all right and the parent stock or the methods of handling are "all wrong."

This is the truth of the matter: If the youngster is from extra vigorous stock which is and has been free from disease and lice, then your chances of success are good with most any of the standard feeds.

The following directions will be safe to follow if you are so situated that you must give "artificial" feeds:

Mix as follows: Corn meal (or feed meal, which is just as good and cheaper), one-fourth; ground barley, one-fourth; flaked oats, ground fine, one-fourth; wheat, mixed feed or middlings, one-fourth. Add 2 per cent charcoal and 5 per cent granulated beef scrap. Add a small amount of soda..the same as though you were making biscuits. Mix thoroughly and add buttermilk or water enough to make a mealy mixture (not soaking wet). This should be baked in the oven slowly until it is dry, after which it should be ground fine.

This will come out of the oven the same as "johnnycake," but not as moist, thinner and drier.

To this you may add about 50 per cent hard boiled egg for the first three to six days, after which the egg should be reduced slowly, and after four or five days it may be dispensed with.

At about this time kernels of wheat, milo or Egyptian corn added will aid you in getting them started to eating other feed which is fully as good and not so laborious to prepare.

It will be understood that to the above feed you may add green onion, or dried onion chopped fine, or green alfalfa or any other green which they like.

A TIMELY WARNING

To feed very small quantities is a very good rule. Make them clean it up; don't leave considerable which is not eaten to sour on the board or ground. Sour crop may be the result—and they go fast from this cause.

I wish to add that the greatest pleasure and profit in this splendid industry is in "free-ranging" these little fellows in the fine spring days in California—on new ground all the time, where they get insects and green feed—where they are growing into a big check for much-needed use in the fall.

ALABAMA FARMER BEATS THE H. C. L.

Smokes Meat by Simple Easy Method That Saves All Shrinkage

E. Ultseh, Florence, Ala., uses an easy, better method of smoking meat for home use and market. He says: "For years I have been using Wright's Smoke. I tell you it is fine. The meat has such a fine taste and no insects trouble it. I simply won't go back to the old way. This year I smoked eight hogs and the meat is fine—it sells like hot cakes."

Mr. Ultseh simply paints his meat with Wright's Smoke, eliminating all bother and loss. Wright's Ham Pickle is fine for sugar curing—simply mix with 27 pounds of salt and pack meat in it. Get these genuine, guaranteed Wright Pure Food Products from your dealer.

Simply send your name to E. H. Wright Co., 826-D Broadway, Kansas City, Mo., for valuable illustrated book on expert methods of curing meat. Also learn how you can get a complete highest grade butchering set at lowest factory cost.—Advertisement.

International 8-16 Power and International Equipment — the Wise Combination

These International Machines, Requiring Power at Drawbar or Belt, are Built to Work Right with Tractors:

BELT

Threshers
Baling Presses
Feed Grinders
Corn Shellers
Ensilage Cutters
Huskers and Shredders
Huskers and Silo Fillers
Cane Mills
Stone Burr Mills

DRAWBAR

Grain Binders
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Headers
Push Binders
Mowers
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Be guided by the judgment of thousands of International owners. For belt work now and for drawbar work in the spring, follow their advice. Use International equipment. *Remember that both Titan 10-20 and International 8-16 now sell for $900 — lowest prices ever quoted on these tractors with their present equipment.*

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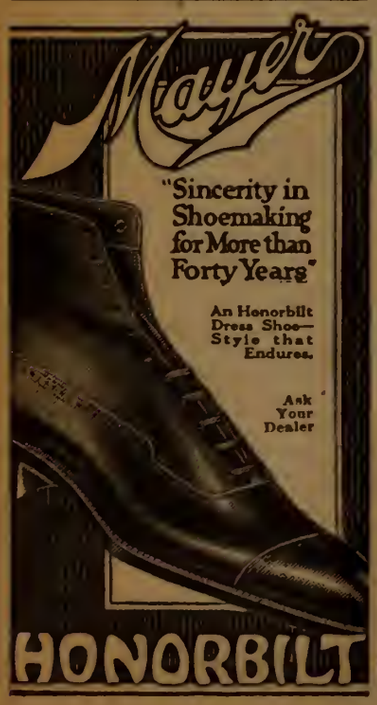

YOUR GARDEN of FLOWERS

by Helen Temple

Fancy-Leaved Caladiums

THE fancy-leaved Caladiums are preferred by many plant lovers to Begonias. The colorings are bright and distinct, and the markings beautiful. Pink, red and white usually predominate. They demand a warm, moist atmosphere and rich soil.

Helen Temple

AND CARE

PROPAGATION

Leaf mold, sandy loam, and sand comprise a suitably rich, friable soil. Drainage should be provided. The caladiums should be kept in a temperature of not less than 75 degrees until well established, then accustomed to less warmth. In the fall when the foliage dies down withhold water to retard growth, but do not allow them to become too dry.

Lay pots on their sides in a dry, warm basement until March, when they should be taken up and planted in moss. Shake all of the old soil from roots, or tubers, place in flats with a layer of moss as a bed and about an inch for covering. Keep moist. When a good growth has begun place in 4-inch pots, using the soil mixture advised for a rich, friable soil. Do not allow to become crowded but repot as soon as there are signs of this. Moss is used by most florists to aid rapid germination. It is not necessary, however. Clean sand also may be used.

Aspidistras

ORIGINALLY, the Aspidistra came from China. Owing to its hardiness and adaptability it is one of our most popular house plants. It will thrive in dark hallways or corners where other plants would die. I can recommend it for any undecorated corner where few other plants will grow.

PROPAGATION AND CULTIVATION

The Aspidistra is propagated by division of the plant, also the rhizomes. When propagating by plant division, divide in late winter and pot at once in equal portions of leaf mold and sand. When using the rhizomes or tubers, cut them in pieces about three inches long, burying in leaf mold and sand. Keep flats at temperatures of not less than 75 degrees until the plants are well sprouted; then pot in three or four-inch pots. Keep well watered during propagation.

The Aspidistra is easily cared for. It requires an abundance of water, however. Wipe the foliage clean with a damp cloth, then go over it occasionally with a pure vegetable oil, which furnishes a gloss.

Schizanthus

THE Schizanthus is commonly called "Poor Man's Orchid." However, it is easily grown and well adapted to window boxes and pot-plants. Being a native of Chile, it demands a warmer situation than many of our North American plants.

The Schizanthus is an annual. Seed sown in September will produce early spring blooms.

Sow in flats, indoors or under a frame.. Transplant as soon as possible into larger flats or thumb pots, transplanting again when they become well-established, stocky plants, to larger pots or window boxes. The seed soil is the same as that used for all seedlings. Finally transplant to any good fibrous loam, enriched with rotted cow manure or leaf-mold.

Red spider sometimes attacks the young plants, but may be controlled by frequent spraying with clean water. A mild soap solution or salt spray also is good, followed with a spray of clear water. Red spiders are indicated when the foliage of a plant turns yellow. They attack plants that become too dry, especially when the temperature is warm and dry. Keep your greenhouse moist.

Calceolarias

THE cultivation of Calceolarias as a house plant has become popular recently, due to its bright colorings. Being a native of tropical and semi-tropical regions, the Calceolaria must be treated as other tropical plants.

It will die from lack of water more quickly than many of our native plants. The soil must be rich in humus, well drained and always moist, though not soggy. It is not necessary to wash the leaves. Calceolarias are very particular about their roots. They must never be allowed to become crowded and should be repotted often.

The Calceolaria never should be grown in a room flooded with gas fumes or heat. It will thrive only in cool moist air. After once becoming diseased, it is impossible to remedy the condition and it is well to discard the plants.

METHOD OF PROPAGATION

The Calceolaria seed is very fine. Sow in flats in thoroughly moistened, sifted sand and one-quarter sandy loam. Cover the seed with a piece of glass, keeping warm and moist at all times to cause germination, which should occur within ten days. The first sowing in June should bring blossoms the following March. The sowings may be continued until September. As soon as the little plants are large enough to handle transplant into thumb pots, in soil composed of equal parts of sand, leaf-mold and loam. Provide ample drainage of gravel and a bit of charcoal. Transfer to seven-inch pots before blooming. Always keep the little plants in an atmosphere similar to that in which they were grown before transplanting. When they begin to show signs of buds, a little liquid manure added to the water will give added strength. As is the case with all blooming plants, the water should be increased as soon as flowering begins.

Calceolarias will bloom for many weeks. As soon as they begin blooming, transfer to situations where there is less moisture in the atmosphere, and protect from heat and draughts.

After the blossoms begin forming, there is very little tendency toward crowding of roots; repotting, therefore, seldom is necessary. The Calceolaria also may be started with cuttings from the old plants, although best results are obtained from seed.

February Work

FEBRUARY is the beginning of spring in many parts of California. If the garden has not been "turned over," it is not too late to give it a thorough stirring up. Fertilizer should be spaded under when possible.

Much pruning should be done this month. Use the prunings for starting new plants and shrubs. Start all cuttings in clean sand.

February often is the best month for fertilizing the lawn. Dig out the poor spots and sow new seed.

It is too early for much outdoor sowing in the interior and coastal regions, but seeds should be sown under glass. Hot beds and cold frames furnish a means of bringing the seedlings in shape for early planting.

Plant and transplant sweet peas, asters, antirrhinum, calliopsis, celosia, chrysanthemums, salvia, carnations, pansies, Shasta daisies, verbenas and petunias this month. Where the weather is cold and unsettled do not attempt outside planting of any but the hardy cuttings, which should be protected. Bulbs to plant this month are the callas, tuberoses, cannas, gladiolus, dahlias and narcissus. If your bulb beds need plant food and fertilization has been delayed, dried blood and bone meal may be spaded under just before planting the bulbs.

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BOYS AND GIRLS Their Work and Play

Elizabeth's Fairy—A Little Story By Jean Jerome

COULD the good fairies have given Elizabeth Houston her dearest desire, she would have been quick to make a choice for all her thirteen years she had wanted to learn to play the piano.

But misfortune had fallen upon the Houston household at the death of Mr. Houston, and for the past eight years, it had been necessary for Elizabeth's mother to work, leaving Elizabeth to take care of the household tasks and her younger brother, after school.

Fortunately they owned the rambling white house at the end of a quiet street in a small town in California, but there had been many difficulties to overcome before Elizabeth's mother succeeded in securing permanent employment.

Still it was impossible for Elizabeth to have her wish fulfilled.

"Some day, mother," she would say, "when it is really, truly possible, I am going to learn to play the piano. Of course, I am not even thinking about it now, but I know some day, my good fairy will choose to wave her magic wand."

And she would return to her work with a smile, for the corners of her mouth as well as her nose had the natural habit of turning up, a sunny disposition having been her endowment.

IT WAS Elizabeth's custom each evening upon her return from school, to do the daily marketing, and on this particular day as she walked down the street, a tiny tot with dancing yellow curls darted across the street.

Elizabeth gave a quick glance to the right. Horror transfixed her to the spot. A large automobile was coming down the street at terrific speed. Evidently the driver had lost control of the machine, and the baby had stopped to play directly in the path of the big machine.

There was no time for Elizabeth to debate upon whether or not the driver would be able to turn out of the way. She must act immediately.

Dropping her basket, she threw herself forward, caught the child in her arms, and rolled to the side of the road, just as the big car rushed past. The rush of dusty air; the smell of gasoline, and the terror of the moment overcame her.

WHEN she opened her eyes a strange face that she thought, was the most beautiful she had ever seen, was bending over her.

Tears stood in the large dark eyes and the lips trembled as they spoke.

"Little girl, little girl, I have never seen you before, but as I came down the street looking for Bobby, who has a naughty habit of running away, I saw you throw yourself in front of that machine and save him from a terrible death. The doctor says you were just stunned from the shock and Bobby is all right, except for a few scratches.

"But, dear, whatever can I do to repay you? If only there is some way in which I can show my appreciation. Won't you tell me?"

"I don't want you to reward me," Elizabeth replied. "I am only thankful that I was there and could protect your little boy from that terrible machine."

"Oh, but you must let me do something for you. I want to so very much."

AS SHE looked down at her, she seemed to Elizabeth the embodiment of the good fairy that she felt was always near her, and after a moment's hesitation she answered.

"If you would only give me the opportunity to earn some money—enough, well enough to pay for piano lessons—I should be happy. But I should prefer to earn the money."

"If that is the case, I know how we can arrange it splendidly for a long time. I have been trying to get some trustworthy person to take care of Bobby a couple of afternoons a week, and so far I have been unsuccessful, unless—"

Elizabeth glanced up at her quickly.

—"unless you would come over after school and take care of him. I feel I can trust you, for you have shown you love children, and I should be happy to pay you a dollar each afternoon. Do you think that would pay for the lessons?"

"Oh, yes; more than pay for them," Elizabeth answered, "and I am the happiest person in the world, I believe."

"Yes, you are ONE of the happiest persons in the world," replied Bobby's mother. "I am the other."

How Would You Like Such a "Pony"?

A happy party of South American younsters enjoying a ride in their Llama-drawn cart. The Llama is a gentle beast-of-burden, related to the sheep and goat. —*International Photo.*

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"Bean" Power Sprayers

Tractor Tracts of a Technical Turn

By Walter H. Gardner

THE RANCHER WHO HAS A CONSIDERABLE EQUIPMENT sooner or later will find it advisable to know something of *manganese steel.* Tractor treads are made of it; so are drive sprockets; pump runners; wearing plates — an increasing number of parts that must stand up under abrasive wear.

W. H. Gardner

For this peculiar metal does not wear as do harder and more crystalline steels. It is soft rather than brittle—and exceptionally tough! Its outer skin can be filed—a little; but the lathe tool can't touch it. It acts almost like a rubber rather than like a steel. A homely comparison would be to liken it to caramel candy—and to compare the more crystalline steels to a lump of sugar. The sugar is harder, but crunches to pieces between the teeth; while it takes a lot of chewing to conquer the caramel!

Manganese costs half again as much as ordinary steels and lasts two to seven times as long. When cast in the foundry it is glass-hard and brittle and has to be quenched in cold water to toughen it—a process just contrary to the treatment given other steels. It can't be machined and it can't be reworked by a blacksmith. And it can always be detected—no one can ever fool you on manganese steel. For it is quite non-magnetic—there's no pull when you hold a magnet against it—whether it be a toy one or the heavy part of an old magneto!

ON A SUMMER NIGHT YOU HAVE DRIVEN your automobile down in the river bottom and been delighted at the way the motor picked up in the cooler, damper, heavier air. But why? Scientists have had a hard time explaining that apparently simple thing. There have been many faulty explanations. Some said that the moisture in the air expanded to steam and gave added power in the cylinders. But of course there wasn't enough moisture for that!

Others said that the water was disassociated by heat to its atomic parts of oxygen and hydrogen—that the newly-freed oxygen combined with the carbon and burned it out, while the hydrogen united with more oxygen and exploded with an addition to the power. Arrant nonsense—for the heat isn't great enough to disassociate the water—and if it did the oxygen and hydrogen could only reunite in the same proportions.

Then it was held, with more reason, that the moisture simply had a cooling effect—sufficient to prevent pre-ignition: to hold back the firing of the charge from the heat of the motor until the instant of the spark.

But now comes a new series of experiments which show the real cause of this most noticeable and beneficial effect of the introduction of finely divided water particles in the fuel intake. It seems that in a very hot motor running on "dry" fuel there is a tendency for the last part of the combustion in the cylinder (for remember that gasoline doesn't explode, but burns) to take place at so rapid a rate as virtually to be an explosion—with too heavy a knock on the piston just at the time it has nearly reached the end of the power stroke.

The explanation as to why this should be is a little hazy—perhaps the heat of the gases is raised to a critical point by the first part of the combustion. Anyway, the water has the effect of making the fuel charge burn evenly clear to the end of the stroke; thus doing away with that little whiplash of an explosion right at the end. Accordingly, any device that effectively introduces a finely divided spray of water to the cylinders is a good thing for any tractor.

THE HUMBLE PISTON RING is receiving a lot of attention lately—that little ring that should be a lasting symbol of wedlock between piston and cylinder. But sometimes the cylinder develops eccentricities, the piston gets a slap and there's friction all around!

One stunt has been to put a spring *back* of the ring. This seems to compensate for some irregularities and stops "piston-slap" for a while at least. This has a tendency, however, to produce too much wall tension.

A ring now being offered is made in two pieces, with a tiny spring of slightly corrugated steel between. It is claimed that this spring perpetually forces the upper half of the ring to contact with the upper shoulder of the groove and the lower half against the under shelf—closing the path for lost compression and wasted oil. And this ring seems to stop slap.

Not that it centers the piston—it

Illustration, Courtesy Kroyer Motors, Co.

Conquering Difficulties

THIS orchardist believes in sub-soiling. With the four-wheel-drive tractor shown, he is not daunted by a stiff grade. This remarkable machine, a product of California brains and industry, embodies entirely new principles of design, combining power on all wheels with a unique type of "tread" that is said to give almost positive traction under conditions heretofore considered unsuited to the wheel-type tractor.

can't do that—but it does hold it to a prescribed path that may have but one contact with the cylinder wall and so stops the tapping and further development of irregularity. But two-piece rings should be used only in the two lower grooves—never in the top!

Does the Tractor Compete With the Horse?

THE advocates of animal power, the average farmer, and even those of the tractor industry, are inclined to look upon the tractor as a mere substitute for the horse, when, as a matter of fact, it is not in competition with the horse.

The tractor has ushered in a new system of farming. Even aside from its unlimited adaptability for belt work, it brings advantages that nothing else can provide. It means better soil preparation, extra acreage, soil conservation through deeper plowing, bigger yields per man and per acre, insurance against adverse weather conditions, and, the most important, final advantage of greater profits to the farmer himself.

There is no substitute for the farm tractor. The farm tractor is not in competition with the horse. The tractor has created industry where industry did not heretofore exist.

—The Caterpillar Times.

For in many modern motors the top ring may almost clear the top of the cylinder wall at the height of the stroke. Look to your rings! Few automobile or tractor owners replace their rings often enough!

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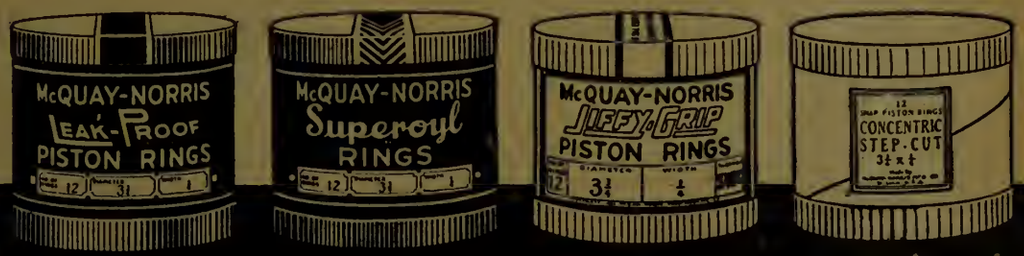

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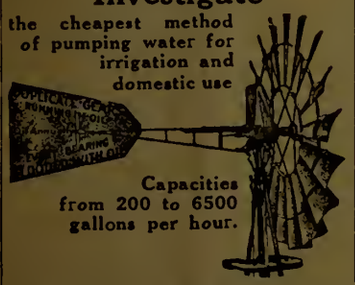

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ISABEL SINCLAIR'S PAGE

For the Woman in the Home

The little cares that fretted me—
I lost them yesterday
Among the fields above the sea,
Among the winds at play,
Among the lowing of the herds,
The rustling of the trees,
Among the singing of the birds,
The humming of the bees.
—Elizabeth Barrett Browning.

Dear Friends:

February comes again—the shortest month of the year, but a month that stands out as a bright light in the march of time. Each year at this time is awakened in our hearts anew the love and fealty held for those who stood at the helm when our country was torn by enemies and the struggle for individual freedom. I am sure you all know of whom I write—our beloved Washington and Lincoln.

We read much of the seriousness and sorrow of these two men, and truly there was cause. But every one knows of Lincoln's wonderful sense of humor, in spite of circumstances, for he was a firm believer in finding the humorous side to all situations. And, indeed, it would be nothing short of failure were we to exclude from our life's experience that quality wherein one may find a bit of laughing, sunshiny mirth.

One time at a spelling match Lincoln was asked to give the definition of "love." "Love," he said, "is an agreeable passion; love is sometimes stronger than death and folks that love know it."

"Where did you get the definition?" asked the teacher.

"I got it from—from—oh, that's just plain horse-sense," he replied.

Later came the word "seraphim." He spelled it correctly. The definition was asked for. "The kind of folks we may associate with if we keep out of the "Slough of Despond," he replied.

"Tell us where you got it," asked the teacher.

"I found it in Bunyon's 'Pilgrim's Progress' one night as I lay before the fire trying to learn something new. There was a wolf howling down in the timber. I tried to learn a new word between each howl. This was the third," was the answer.

He felt there were too many big things in the world to worry about trifles, and his life is an example of this belief. And surely, dear friends, if we could but look for the humorous in every situation we would soon find that this quality and the ability to smile is as important to the race as any serious problem which arises.

Sincerely,

Isabel Sinclair

To Remove Stains

Fruit and Fruit Juices. Use boiling water, applying bleach if necessary. Repeat applications of boiling water, poured from a height.

Grass. (1) Wash with cold water and soap; bleach if necessary. (2) Use grain or wood alcohol or ether, applied by sponging. For colored fabrics, apply molasses or paste of soap and cooking soda and let stand over night.

Grease and Oils. Cover spots with powdered absorber such as talcum, French chalk, fuller's earth, starch or dry meals; let stand several hours, then brush carefully, repeating if needed.

Chocolate, Cocoa and Coffee. Use boiling water, bleaching if necessary with potassium permanganate or Javelle water (see below). If cream has been added to coffee, first apply a grease solvent.

Blood and Meat Juice. (1) Rub with naphtha soap, soak in warm water and wash. (2) A paste of raw starch mixed with cold water can be applied to stains on flannel, blankets and heavy goods.

Ink. (1) Soak fresh stains in sour milk or buttermilk, or apply absorbent. (2) Soap stain with oxalic acid solution, rinse in water to which few drops of ammonia are added.

Indelible Pencil. (1) Soak in alcohol and wash with water and soap.

Shoe Polish. Black—Rub with grease; then wash in thick suds. Use turpentine on wools and silks. Brown—Soap and water; sponge wool with alcohol; then wash in soap and water.

GOOD STAIN REMOVERS

Javelle Water. One-half pound chloride of lime dissolved in two quarts cold water. Dissolve one pound of washing soda in one quart of boiling water. Pour the clear liquid from the chloride of lime into a bottle and mix with the solution of washing soda. Cork and keep in a dark place.

Potassium Permanganate. Dissolve one teaspoon acid crystals in one pint water.

Place tarnished silver for a short time in boiling water containing a good-sized lump of soda.

Every Girl Should Have Her Own Room

If it is possible to spare the space, every girl should have a room of her own.

Girls instinctively love that which is beautiful and try to express themselves in their surroundings, and there is nothing that gives a girl more pride than a room of her own. Here, too, she can go when wanting to think things out alone, as girls often do.

WALLS AND FLOOR

Walls and floors since they form the shell of the room naturally should be considered first, and one's own taste may govern the selection of the color scheme.

The walls may be tinted any delicate light color, or an inconspicuous flowered paper with the preferred color predominating may be used. But the ceiling should be either cream or white.

The woodwork may be painted white, ivory or French gray, as desired. Smoothly finished floors, partly covered with rugs are easily cared for. Paint or varnish may be applied to an old, unfinished wood floor, followed with a coat or two of wax to give a polish. If desired, attractive rugs can be made at home by braiding, crocheting, or weaving rags and odds and ends of material.

PAINTED FURNITURE

Nearly every girl loves painted bedroom furniture, and really it is preferable and much prettier than cheap grades of oak or stained wood. Old bureaus, bedsteads, tables and chairs, even though quite different in design, can be made to look as though they belonged together if carefully painted white, ivory or French gray, choosing, of course, the same color as the woodwork. When painting furniture, the old finish should be removed with any good paint remover, and the wood sandpapered smooth before paint is applied. Usually, one coat of flat and two coats of enamel will suffice. An improvised dressing table can be made by hanging a mirror over a small table and finishing the table with a valance of cretonne or chintz.

WINDOW DRAPERIES

And speaking of cretonne and chintz, one naturally thinks of the window draperies. Simple, durable, softly-hanging material such as white or cream voile, scrim, Swiss, or cheesecloth, hemmed or hemstitched, makes good washable curtains, which may have over-curtains of colored or figured materials.

A few cushions, a table cover, and the bed spread and pillow shams may carry out the color scheme in cretonne and when a few well-chosen pictures and some books have been added, a once unattractive room may be made into a bower of daintiness that will be a delight to the heart of any girl.

What My Community Is Doing to Make Rural Life More Attractive—Cash Prizes Offered

Last month we announced a new innovation—a surprise for our women readers. Here it is! A prize contest (for paid subscribers only) to secure an exchange of ideas concerning one of the most important questions affecting rural welfare and farm social life.

HERE ARE THE PRIZES

For the best letter of not more than 500 words discussing the above subject ORCHARD and FARM will pay $10
For the letter adjudged second best, ORCHARD and FARM will pay 5
For the letter adjudged third in interest and value, ORCHARD and FARM will pay 3

No doubt the subject suggests immediately an interesting letter that you can write the Household Editor. Do it now—while you feel the "urge." Three subscribers are going to win some "pin money" very easily. Why not resolve to be one of the "lucky ones"?

Letters must be in our hands by the 20th of February. Winners to be announced in the March number. Write your letter NOW on the subject, "WHAT MY COMMUNITY IS DOING TO MAKE RURAL LIFE MORE ATTRACTIVE." Address Isabel Sinclair, ORCHARD and FARM, Los Angeles.

Potatoes

Cold mashed potatoes may be reheated satisfactorily if placed in a small pan, and then set in a larger pan of hot water tightly covered. Keep water at boiling point for half an hour and potatoes will be ready to serve. Left-over mashed potatoes are delicious if about a quarter cupful of finely chopped onion is added to each three-quarter cup of potato, adding salt and pepper to taste. Shape into cakes and fry in deep fat.

The following is a simple but delicious and a bit "different" way to prepare potatoes: Select large smooth potatoes, wash thoroughly and bake in a moderate oven until nearly done. Then remove, cut in half crosswise and scoop out the inside, being careful not to break the skin. Mash the potato and to each cupful add one-third cup of finely chopped onion and season with butter, salt and pepper to taste. Stuff the shells with this mixture, fit together and bake in slow oven until the onion is done.—George Fitzgerald, Los Angeles.—(H.)

My "Twine Spool"

My husband often remarked about the seeming impossibility of finding string when it was wanted, and one rainy evening I found him busily engaged in carving out a U-shaped article from a piece of soft wood. Into this he fitted a large spool through which had been run a heavy wire, bent to form a handle at one end as in the illustration. (He remarked that an old shovel handle would make even a better holder.)

The handle fitted into grooves and was held in place by small nails. When completed the device was fastened to the window frame over the sink and stained to match the woodword. Thus whenever I remove a piece of string from a parcel I can wind it on the spool by means of the handle, and it is one of the simplest matters in the world now to find a piece of this useful material free from knots when I am in need of it.—Mrs. Joseph King.

Little Helps

Launder all clothes before they are badly soiled.

Use of fruit improves the quality of the blood and prevents acidity in the system.

Built-in cupboards should extend to the ceiling, thus giving more room for storage and less for dirt.

If an article has been scorched in ironing, wet in cold water and lay in the bright sunshine. This will take the mark out entirely.

Eucalyptus oil will remove grease stains from any kind of material without injury. Apply the oil with a clean piece of flannel, and rub the material gently until the stains disappear.

To test butter, place a small piece in a spoon and hold it over a gas flame. If good and pure it will boil quietly and there will be many little bubbles while it is doing so. If adulterated there will be much spluttering.

ENJOYS USING DRESS PATTERNS

"I am very much pleased with ORCHARD and FARM patterns and consider them better at 15 cents than others costing 35 and 40 cents."—Mrs. R. C. King, Battler Mountain, Nev.

Note—Compare these patterns, as to price and style, with those obtainable elsewhere!

PRETTY COSTUMES
Chosen by Isabel Sinclair

These costumes are simple and can be made readily by the home dressmaker from the instructions provided. Send 15 cents in silver or stamps for each pattern desired. Address Pattern Department, Orchard and Farm, 1111 South Broadway, Los Angeles. Give full name and address.

3856—Girl's Dress

Cut in 4 sizes: 6, 8, 10 and 12 years. A 10-year size requires 3½ yards of 32-inch material. Price 15 cents.

3858—Junior's Dress

Cut in 3 sizes: 12, 14 and 16 years. A 14-year size will require 3 yards of 38-inch material. Price 15 cents.

3851—Lady's Dress

Cut in 7 sizes: 34, 36, 38, 40, 42, 44 and 46 inches bust measure. A 38-inch size requires 4¾ yards of 40-inch material. The width at the foot is 2½ yards. Price 15 cents.

3622—House Dress

Cut in 7 sizes: 34, 36, 38, 40, 42, 44 and 46 inches bust measure. A 38-inch size will require 7 yards of 27-inch material. The width of the skirt at the foot is 2½ yards. Price 15 cents.

3866—Misses' Dress

Cut in 3 sizes 16, 18 and 20 years. An 18-year size requires 4⅝ yards of 38-inch material. The width at the foot is 2 yards. Price 15 cents.

3834—Lady's Under Garment

Cut in 4 sizes: Small, 34-36; Medium, 38-40; large, 42-44; extra large, 46-48 inches bust measure. A medium size requires 2¼ yards of 36-inch material. Price 15 cents.

3100—Set of Infant's Clothes

Cut in one size: It will require 2⅝ yards of 36-inch material for the dress, 2¼ yards of 27-inch material for the petticoat, and 2 yards of embroidery for the ruffle. The slippers require ⅝ yard of 18-inch material and the barrie coat ⅝ yard of 27-inch material for band, and 1 yard 40 inches wide for skirt. Price 15 cents.

3862—Child's Romper

Cut in 4 sizes 1, 2, 3 and 4 years. A 3-year size requires 2⅛ yards of 27-inch material. Price 15 cents.

3479—Lady's Under Garment

Cut in 4 sizes: Small, 32-34; medium, 36-38; large, 40-42; and extra large, 44-46 inches bust measure. A medium size will require 2¾ yards of 36-inch material, or 3⅛ yards without the yoke. Price 15 cents.

CATALOG NOTICE

Send 15 cents in silver or stamps for our up-to-date spring and summer, 1922 catalog, containing over 500 designs of ladies' misses' and children's patterns, a concise and comprehensive article on dressmaking; also "Some Points for the Needle," illustrating 30 of the various simple stitches. All valuable hints to the home dressmaker.

Use Coupon in Ordering Patterns

Herewith find.....cents, for which send me the following patterns:

Pattern No. .....Size.....

Pattern No. .....Size.....

Pattern No. .....Size.....

Be sure to give number and size. Send orders for patterns to ORCHARD and FARM, 1111 South Broadway, Los Angeles. Be sure to sign your name and address below.

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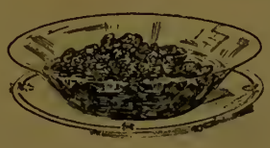
Had Your Iron Today?

More Raisins When Work Slackens

—a good rule on the farm



Another Luscious Way

Another way to get the benefit of raisins is to serve them stewed, with cream as a regular breakfast dish.

Try this way, too, and note the results in ten days.

Sun-Maid Raisin Bread

3 cups flour, 4 teaspoons baking powder, 1 teaspoon salt, ¾ cup sugar, 1 cup Sun-Maid seeded raisins cut in pieces, 1 egg, 1 cup milk

Soak raisins in boiling water for 15 minutes. Drain and dry. Sift flour, baking powder, salt and sugar together. Add raisins. Mix beaten egg with milk and add to flour, stirring constantly. Pour into greased bread pans. Let stand for 10 minutes and bake in moderate oven for 40 to 45 minutes.

This makes two small loaves or one large loaf.

All measurements for this recipe are level.

Blue Package (Seeded), best for Pie and Bread.

IT'S very easy when you bake to put *raisins* in the bread. And there's double reason for it when farm work is slack.

For raisins have a mild laxative effect and are rich in food-iron, which helps build up the blood.

Daily exercise is Nature's best way to keep you in condition. Lacking exercise her next best method is the use of well chosen foods.

The sugar of the raisin and the bulk and roughage of the skins are of real aid in avoiding constipation.

Then Nature has put into raisins the eight most needed mineral salts—phosphorus and iron particularly.

So in this delicious fruit food you have incomparable flavor and a health value that no one should overlook.

We print a simple recipe for luscious raisin bread. Try it next time you bake bread. See how good it is—and how good *for* you.

SUN-MAID RAISINS

Always ask for Sun-Maid Raisins, made from California's finest table grapes, yet costing no more than ordinary raisins. Seeded, blue package (seeds removed) best for pie and bread; Seedless, red package (grown without seeds) best for stewing; Clusters (on the stem), a luscious, quick dessert.

Raisins are 30 per cent cheaper than formerly. See that you get plenty in your food.

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Send the coupon and we'll mail you more than 100 tested recipes for raisin foods in a valuable free book. Send for it now.

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FOR SALE—Fifteen acres apple trees, 11 years old, and five acres pasture land with buildings. Located in well known Umpqua Valley near Roseburg, Ore. Trees bore three thousand boxes last year. Write Alfred J. Moore, Minot, North Dakota.

FOR SALE—80 acres good land all under irrigation. Close to excellent prune orchard. Close to good schools and railroad. $125 per acre. Terms. Box 12, Route 3, Chico, Cal.

OKLAHOMA farms. Write for free agricultural booklet. Board of Commerce, Shawnee, Oklahoma.

FARMS WANTED

WANT to hear from owner having farm for sale. Give particulars and lowest price. John J. Black, 110th Street, Chippewa Falls, Wisconsin.

I WANT WESTERN FARMS for cash buyers, will deal with owners only. R. A. McNown, 307 Williamson Bldg., Omaha, Neb.

WANTED—To hear from owner of good ranch for sale. State cash price, full particulars. D. F. Bush, Minneapolis, Minn.

REAL ESTATE—Sale or Exchange

FARM exchanges—Contains listings farms, lands, large or small tracts. Copy for stamp. Andresa Frank Dike, Box 792, San Francisco, Cal.

REAL ESTATE FOR EXCHANGE

WANT TO TRADE 80 acres or part, $75 per acre. Unimproved irrigation district, Washington, elevation about 300 feet, for California property. Will assume or pay some cash. Box 413, Brouerick, Cal.

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FOR SALE—Some of the finest orchard land in Southern California in a rapidly growing community, $10 to $50 per acre. Water available if desired. Call or address Adelanto Fruit Co., Adelanto, Calif.

PARTNER WANTED

WANTED—Partner, vineyardist, single, strong, to plant large vineyard. Best market. Hill ranch, 250 acres, loamy soil, warm climate, 7 miles town. A dum at small cost will give sufficient water for irrigation for grapes, truck, etc. Have buildings, five heifers, 1 bull pedigreed, 200 hens, 3 incubators, horses, etc. Divide profits equally five years. $3000 required. Splendid opportunity. J. Tonge, Soledad, Cal.

AGENTS WANTED

WANTED—SALESMEN WHO CAN SELL high grade dependable nursery stock. Exclusive territory; outfit furnished and cash advanced weekly. Commission basis. Address Albany Nurseries, Inc., Albany, Oregon.

AGENTS—Mason sold 18 sprayers and autowashers one Saturday. Profits $2.50 each. Square deal. Particulars free. Rueler Company, Johnstown, Ohio.

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FOR SALE—Berry plants. Logans, 6, $1; Corey Thornless Mammoth, 4, $1; 10, $2. Red Raspberries, 10, $1.50. C. E. Jenkins, 127 Luther St., Riverside, California.

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SWEET CLOVER SEED for sale. Buy direct from the producer and save money. Small quantity highest grade seed yet for sale by the largest producer of the State. Quality and variety guaranteed. Price 15c per lb., postage extra. Cheaper rates on 100 pound lots. Write for sample. I also receive orders for the new annual Hubam. George Forest, Standish, Calif.

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LIVESTOCK—MILCH GOATS

FOR SALE—Registered grade Toggenburg milch goats and kids. For service, El Rey de la Estrella, No. 7406. Pure bred naturally hornless Toggenburg buck. Service fee $5. Ed Thomas, Rodeo, Cal.

GOOD FAMILY milk goats, $25 to $60. Russell Goat Ranch, Calistoga, Cal.

LIVESTOCK—Duroc Jersey Hogs

SPECIAL—Weanlings sired by a son of King Orion Jr., who was second prize winner at the National Swine Show, 1919, and grand champion, San Francisco Land Show, 1919. H. E. BOUDIER, Napa, Cal.

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FOR SALE REASONABLE—Formula U. S. and Canadian Registered Trade Mark of a most efficient Hog Cholera Powder. Preventive and Cure. PAUL HUTH, 5 Felix Place, San Francisco.

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AMBITIOUS writers of photoplays, short stories, songs, poems, newspaper articles. Send today for FREE helpful booklet, "Successful Writing." Writers' Digest, S-698 Butler Bldg., Cincinnati, Ohio.

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WE can now supply all kinds of baby chicks, baby turkeys and ducklings, and can meet all competing prices for January and future delivery. We have successfully served the public for sixteen years and are better fitted than ever to give you good healthy profitable baby chicks. We also carry a large stock of pupplies, birds and cages, pullets, feeds and supplies. Pioneer incubators and brooders can be had at very short notice; also fireless brooders.

PIONEER HATCHERY
Phone 61635.
320 So. Spring St., Los Angeles, Cal.

BABY CHICKS

Hatching each Monday and Wednesday. Barred Rocks, Rhode Island Red and White Leghorn pullets. Prices start at $1.00 each. Send your order now for fall chicks. Price list now ready. Complete line of poultry supplies and remedies. All kinds of pupplies, kittens, Birds and pet stock.

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WHITE LEGHORN CHICKS

from the best flocks in the Valley. Book orders early for a certain date. Established 10 years. 30,000-egg capacity. Send for prices. Visitors welcome.

The White Leghorn Hatchery
951 E. Second St. Pomona, Calif.

1922 MISSION HATCHERY 1922
Early chicks are the ones that pay first and best. Our special letter will tell why we think so. Write for it and particulars of our White, Brown Leghorns, Black Minorcas, R. I. Reds, White and Barred Rocks. Our matings are pure bred, heavy laying strains, quality good, service good; reasonable prices. Write your needs and see if we cannot get together.
MISSION HATCHERY,
Box 7, Campbell, Cal.

S. C. WHITE Leghorn baby chicks. From trapnested Tancred and Tom Barron roosters. Their mothers have an egg record of close to 300 per year. We guarantee safe arrival and full count. 15 years shippers of baby chicks. Literature and prices on request. Booking orders NOW for FALL of 1921 and SPRING of 1922. HICKS ELECTRIC JUBILEE HATCHERY, Petaluma, Cal. Route 2, Box 22.

BABY CHICKS, EGGS—Hoganized White Leghorns (none better), Brown Leghorns, utility Rhode Island Reds and Barred Plymouth Rocks, choice Anconas, Black Minorcas and Blue Andalusians, bred for heavy egg production. Free folder. Order early. McDonald Poultry Ranch and Hatchery, Route 1, Box 246, King Road, San Jose, Cal.

WE are now booking orders for S. C. White Leghorn Baby Chix from strong, healthy, vigorous stocks, bred especially for heavy egg production. From 200 to 280-egg strain. If you want strong, healthy Baby Chix place your orders with the Vineburg Hatchery, Vineburg, Cal. All Baby Chix guaranteed. Safe delivery.

WHITE LEGHORNS—Eggs for hatching our specialty. Produced right, selected right, shipped right. 100 per cent fertility guaranteed. A laying strain of proven merit. Prices very reasonable. Send for folder "Secret of Success."
CURTIS WHITE LEGHORN RANCH
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FARM raised, free range, great laying strain, descendants of British Columbia contest winning hens, hoganized S. C. Buff Orpingtons, eggs $3 for fifteen. Extra large, healthy Mammoth Bronze turkeys, eggs 50 cents each. Postage paid. Mrs. J. Wellborn, Warren, Oregon.

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POULTRY

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Santa Ana, Calif.

BARRED PLYMOUTH ROCKS—The M. A. Warren strain of Barred Plymouth Rocks. 1921, 12 hens averaged 223 eggs. Eggs, 15, $5 per setting, mated with cockerels from 1921 record pen. Settings from the flock, $2.50, ex-prepaid and sealed in proper containers. Send cash with orders, under registered mail to avoid delay and loss. Address Mrs. M. A. Warren, P. O. Box 517, San Jose, Calif. We have no agents. Yards at 36 Little Delmas ave. Last orders canceled if the output is sold for each month.

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OUR pure bred stock in demand. Tom Barron White Leghorn pullets for spring delivery. Order now to secure delivery. All styles and sizes incubators, brooders and stoves. Leg bands, automatic feeders and founts. Egg cartons and shipping cases. Ask for our 1922 General Catalogue.
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HEYING'S SINGLE COMB REDS—Again winning highest honors Southern California Poultry Show Santa Ana, Cal., December 13-17. 5th Cock, 2nd Cockerel, 2nd, 4th, 5th Hen, 1st, 3rd Pullet, 1st, 2nd Pen. Best female in show. Color and shape on pullet, color on hen and also champion hen at Jefferson High School egg laying contest. Stock and eggs. Write your wants. Fred Heying, Anaheim, Cal.

BARRED PLYMOUTH ROCKS—"Nothing better in poultry." Wonderful layers. Hens and pullets for sale. Also choice cockerels that will improve your flock. Now booking orders. Have made a specialty of Barred Rocks for over twenty years; "that's why" our birds win at all leading shows. Catalog free. Vodden's Rockery, Los Gatos, Cal.

—1922 BABY CHICKS—
—LAYERS ARE PAYERS—
Ours pay. Hens tested and mated for egg production. R. I. Reds, Barred Rocks, Black Minorcas, $18 per 100. White Leghorns, $15. Shipping charges prepaid on February deliveries. Denton Poultry Yard, Campbell, Cal.

PLACE your orders with us. We give you a money-back guarantee on our pure-bred stock of Toulouse geese eggs, $2.40 per 6. Mammoth Bronze turkey eggs, $4 set 10; R. I. Red eggs, $10 per hundred. Herrick, 141 Bellevue ave., San Francisco, Cal.

BUFF LEGHORNS—Order now for chicks and eggs from Oakland, 1921 prize winners. Wonderful color and type in Heavy Egg Laying Strain. Mating list free. MRS. W. T. WHEELER, ORINDA PARK, BERKELEY, CAL.

CALDWELL'S REDS—Choice breeding stock from greatest trapnested layers and exhibition birds. Cockerels, $5 up; pullets, $3.50 up. Hatching eggs. Write your wants. Satisfaction guaranteed. T. S. Caldwell, 335D West Broadway, Glendale, Calif.

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ELECTRIC HATCHED CHICKS are the best. They are hatched right and are stronger and easier to raise. Satisfaction guaranteed. Lightening Hatchery, Seabright, Cal.

WHITE Leghorn Baby Chicks. Trapnested stock. Booking orders for now and future delivery. Pebbleside Poultry Farm, Sunnyvale, Cal.

"EASTMAN'S BRED-TO-LAY" Trapnested and Hoganized Barred Rocks. BABY CHICKS. Fairmead Poultry Farm, Fairmead, Cal.

PRIZE-WINNING Light Brahmas, hens and cockerels, $5, $10 $15 up. Guaranteed hatching eggs, $3 and $5. No baby chicks. F. W. Ode, Millbrae, Cal.

POULTRY

THE Schlotthauer Single Comb White Leghorns have been bred since 1908 and all breeding stock has been carefully hoganized to insure heavy laying and strong, hardy chicks. Safe delivery and full count guaranteed. For more information write for free booklet. White Plumage Poultry Farm & Hatchery, Exeter, Cal.

THE Redwing Hatchery incubates 250,000 eggs every three weeks, being the largest and finest equipped electric hatchery in the Southwest. We are now booking orders for immediate and future delivery of all the popular breeds of Baby Chicks, Pekin, Muscovy and Indian Runner Ducklings and Mammoth Bronze Baby Turkeys; also our celebrated strain of Oregon-Corvallis White Leghorns. We can supply pullets of all kinds at all times; also incubators and brooders. No order too large or too small to receive our careful attention. Send for prices.
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Our Prices are Right for
SPRING BABY CHICKS
And you cannot beat our stock anywhere in the State. Why not write?
WHITE LEGHORNS ONLY
The Laying Strain.
Custom Hatch, 2c Per Egg
We have the capacity for you.
STEELE'S EGG RANCH
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BETTER HATCHED CHICKS
W. Leghorns, R. I. Reds. Our well bred chicks, hatched under ideal conditions will make producers for you. Free delivery by parcel post. Write for prices.
San Diego Co. Hatchery,
R. 1. SAN DIEGO, CAL.

PETALUMA HATCHERY, established 1902 by L. W. Clark. Chicks every Monday and Thursday. White and Brown Leghorns from heavy laying free range stock. We positively guarantee safe arrival and full count of good, strong chicks and no questions asked. Send for prices and terms. L. W. CLARK, Petaluma, Cal. Box 155.

BOOK YOUR ORDERS FOR BABY CHICKS NOW. JANUARY DELIVERY. ROCKS, REDS AND S. C. WHITE LEGHORNS. ALL HATCHED FROM OUR OWN STOCK. MATURE BIRDS FOR SALE. E. A. FISCHER POULTRY RANCH, BELLVERNON AND EUCLID AVE., COMPTON, CAL.

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THAT are hatched right from our heavy laying strain of Ferris and Hollywood Farm White Leghorns; also Brown Leghorns and Barred Rocks. Our prices are right. OAK KNOLL POULTRY RANCH, T. E. Blake, Prop., Santa Cruz, Cal.

WHITE LEGHORN BABY CHICKS from heavy laying stock. Booking orders now for Spring 1922 delivery. Safe arrival live, vigorous chicks guaranteed. Prices on request. Reliable since 1898.
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432 Seventh street. Petaluma, Cal.

WHITE LEGHORN Baby Chix from Petaluma's heaviest producing stock. We guarantee safe arrival. Literature on request.
PIONEER HATCHERY.
418 Sixth street. Petaluma, Cal.

BABY chicks, Pekin ducklings, Rhode Island Reds, Black Minorcas from heaviest laying stock. Safe arrival guaranteed. Morgan's Hatchery, 5 Wolfe street, San Francisco, Cal.

BROWN and White Leghorn baby chicks and Rhode Island Reds from carefully selected, heavy laying stock. Safe arrival of full count, live, strong chicks guaranteed. ANDERSON'S HATCHERY, Modesto, Calif.

S. C. WHITE LEGHORN Baby Chix from our own Bred-to-lay stock. Now booking for January to June delivery. Model Poultry Farm, W. C. Smith, Prop., Corning, Cal.

WATCH US GROW. Fall chicks, Rhode Island Reds, B. Rocks, White and Brown Leghorns and Anconas. E. W. Ohlen, Campbell, Cal.

COCKERELS—Purebred Silver Laced Wyandottes and White Rocks, $5.00 apiece. Write Mrs. R. C. Mercer, Chilcoot, Plumas County, Cal.

HOGANIZED Rhode Island Red eggs for hatching, $2 for fifteen; $6 for fifty. Mrs. T. Beeching, 1578 W. 46th st., Los Angeles, Calif.

ANCONAS. Our sixth year. Cockerels, single birds, $3.50 and $5.00. Good color, plenty of pep. Satisfaction guaranteed. A. S. WILKINSON, Winton, Calif.

FOR SALE—Black Minorca Cockerels, $5 each, two for $9. Mrs. M. J. Garvin, Inyokern, Cal.

FOR SALE—Ancona eggs. California's best stock 15 eggs, $2; 30 eggs, $3.50. W. D. Rose, El Monte, Calif.

POULTRY

WHITE LEGHORN baby chicks. Pure Tancred strain. Males from hens with actual record 221 to 258 eggs. Circular. Henry Tarratt, Corning, Cal.

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GIANT BRONZE TURKEYS

Large turkeys can be raised at practically same cost as small ones. It is in the strain. One of our toms will give you five more pounds of meat to market in all his get the first year, besides vitality and beauty.

GOLD NUGGET STRAIN
J. Will Blackman, Originator

Won at California's two greatest shows, Gold Special Sweepstakes for best turkeys, California State Fair, 1920, against 66 of the State's best turkeys; also every 1st, 2nd and 3rd prize and Gold Special Sweepstakes at Los Angeles Livestock Show of 1920.

AN UNEQUALED RECORD

Toms and hens for sale; a few high class exhibition toms to win in any show or head any flock. Book orders early for January and February shipment, as each year we are sold out.
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607 East Third St., Los Angeles, Cal.

1921
WILD TOMS ARE ALL SOLD WHY?
More Turkeys, More Money
GREATEST PRODUCERS
An unequaled record for what? Prizes? No, for production. The people know it.
That's why they sell. Order your stock now for fall delivery. The world's champion record turkey as God gave them to us—real Americans and our Californians, too. Better Birds—Lower Prices—Order Now.
M. A. STUTSMAN
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TURKEYS—Purebred giant bronze, male and female stock, sired by our two famous toms, "Goldbank Boy," champion giant bronze first-prize winning cockerel at Madison Square Garden Show, New York, January, 1921 and "Copper King Jr." a 36-lb. yearling son of "Copper King V.," the 38-lb. yearling that was grand champion at Madison Square Garden Show, January, 1919, both bred to choice 20-lb. hens. Eggs in season. Address Bronze King Mountain Farm, Calistoga, Calif.

SEVERAL VARIETIES—BRONZE, BOURBON RED, White Holland turkeys. First prize winners. White guineas, White Muscovy (quackless) ducks, drakes, $3.50. Houdan eggs. Order early. Get choicest. Parcel post 25c extra. B. Hocking, 541 E 33rd, Los Angeles, Cal.

HART'S MAMMOTH BRONZE TURKEYS—Oldest strain of turkeys on the Pacific Coast. Strong, vigorous breeding stock, either of last spring's hatch or year old. Eggs in season, $5 per dozen, $18 per 50, $35 per 100. Albert M. Hart, Clements, Cal.

MAMMOTH BRONZE, PRIZE STOCK—Baby Turks from 35-lb. toms; 20-lb. mature hens, $60—100. Fertile eggs, 40c each. Breeding toms, $15-$20. Inglewood Poultry Co., Box 242, Inglewood, Cal.

TOULOUSE Geese, $12 and $15 pair. Single birds, $7 and $8. Pekin and White Muscovy drakes, $3.50. Mokelumne Poultry Ranch, Lockeford, Calif.

THOROUGHBRED WHITE HOLLAND Turkey Toms. A few beauties at $12. Hens three for $20. Now booking egg orders. Pause Pheasantry, Fairoaks, Calif.

BABY CHICKS—Thoroughbred White Leghorns, Hoganized. No dead or weak ones charged for. Schellville Hatchery, Schellville, Sonoma, Cal.

SPENCER Turkeys, turkey-chicken. Delicious meat. Remarkable layers. Booklet free. Spencer, 9 Case, Santa Cruz, Cal.

DR. WHEELER'S Specific No. 1 for roup, chicken pox and catarrh, 25c, 50c, $1. Germain's, Sixth and Main, Los Angeles, Cal.

MAMMOTH BRONZE EGGS—Prize winning stock, $25 per hundred. Order now. T. F. Middleton, Lankershim, Cal.

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CALDWELLS White Muscovy (Quackless) Ducks, win, weigh, lay and pay. Largest duck of the duck family. Eggs, ducklings, breeders. Free circular. Caldwell Duck Ranch, Box 274, Los Angeles, Cal.

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"ALLEN'S" STROP DRESSING sharpens dullest of razors without honing or grinding. Sample free. THE HOME BARBER, P. O. Box 1315, RICHMOND, CAL.

You Need a Farm in Canada

If you are to secure that independence, success and prosperity which has been the reward of thousands of American farmers who have preceded you.

¶ These farmers knew of the rich tracts of Canadian Pacific agricultural land for sale in Western Canada at low prices—open prairie, partially wooded or park lands—all virgin, fertile and productive. They knew they could not obtain such lands elsewhere at such prices—at an average of $18 per acre.

¶ They knew that Western Canada has carried away, year by year, first international honors for wheat, oats, barley and livestock.

¶ They knew of the success that had been won by farmers from their own state who had preceded them. They knew that Canadian farm values are steadily increasing and that each year they delayed they would have to pay more to purchase desirable farms.

¶ They wanted larger holdings for their growing families. They knew they could secure sufficient land upon terms unobtainable elsewhere—20 YEARS TO PAY.

¶ As a result, 16,000 American farmers took advantage of their knowledge and moved to Western Canada last year.

¶ In Canada the government and the railroads help the farmer in every possible way. It is to their interest to do so. Taxes are moderate; laws are just; transportation facilities and markets are excellent. Language, social customs, religion, money and other conditions are the same as in the United States.

Ask the Canadian Pacific about Canada — CANADIAN PACIFIC RAILWAY

Thousands of American farmers have made prosperous homes in Canada. There will be more this year. Can you afford not to follow them?

Investigate these facts for yourself and let us fill your need. Write today for information to

M. E. THORNTON, Superintendent of Colonization
CANADIAN PACIFIC RAILWAY
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Try Our SPECIAL BIG GUN and "8—8"

Best by Test—Results Always Ask the Growers who use it.

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BIG GUN TANKAGE: 10% Nitrogen, 4% Phosphoric.
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A Remarkable Home Treatment Given by One Who Had It

In the year 1898 I was attacked by Muscular and Sub-Acute Rheumatism. I suffered as only those who are thus afflicted know for over three years. I tried remedy after remedy, but such relief as I obtained was only temporary. Finally, I found a treatment that cured me completely and such a pitiful condition has never returned. I have given it to a number who were terribly afflicted, even bedridden, some of them seventy to eighty years old, and the results were the same as in my own case.

I want every sufferer from any form of muscular and sub-acute (swelling at the joints) rheumatism, to try the great value of my improved "Home Treatment" for its remarkable healing power. Don't send a cent; simply mail your name and address and I will send it free to try. After you have used it, and it has proven itself to be that long looked for means of getting rid of such forms of rheumatism, you may send me the price of it, One Dollar, but understand I do not want your money unless you are perfectly satisfied to send it. Isn't that fair? Why suffer any longer, when relief is thus offered you free. Don't delay. Write today.

Mark H. Jackson, 41H Durston Bldg., Syracuse, N.Y.

Mr. Jackson is responsible. Above statement true.

ONE MAN LOG SAW

Now! Special for 30 Days Only, 3 H-P. OTTAWA OUTFIT, Complete **Only—$89.50** F.O.B. Ottawa

You Cut 15 to 35 Cords a Day!

You get this one-man outfit direct from factory at lowest factory price. Also special sale prices on 4 H-P Log Saws. 30 Days' Trial—10 Year Guarantee. Cash or Easy Terms. Send your name and address on a post card before sale closes. WRITE NOW.

2359C Wood St. Ottawa, Kan.

Glass Cloth A transparent waterproof fabric as efficient as glass for hotbeds. Sample 3x9 feet prepaid $1. Catalog free. Turner Bros., Bladen, Neb.

SYSTEM
in shop office and field

Triangle Hitch for Tractors

TRACTOR plowing calls for a special hitch for each kind of plow.

Engine plows have peculiar tendencies to dodge their full duty at times, especially under varying conditions of soil and of land contour, so that considerable ingenuity is required to keep them in the furrow while the tractor is pulling them up hill, down hill and around the curves.

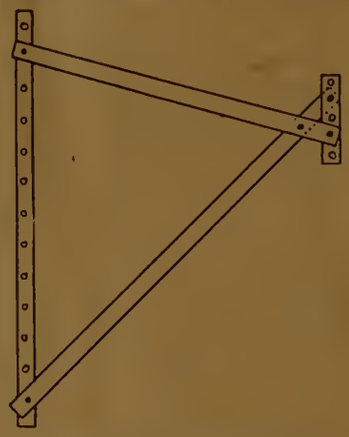


Diagram of Triangle Hitch

The triangle is made of heavy bar iron, the actual size depending upon the tractor and the implement that is to follow. Clevises may be adjusted according to the nature of the work and the turns necessary at end of field.

When the ordinary drawbar-and-clevis hitch fails to control the plow some other device must be substituted.

The illustration shows a triangle hitch that exerts a peculiar influence over the implement. It is adjustable from all angles so that it may be made to apply part of the strain to pull the plow quickly into line to cut even furrows.

The plow frame must be rigid. Yet when the rigid frame is attached to the tractor by means of the ordinary swinging bar hitch, too much freedom of side motion may result. The triangle draw bar is intended to counteract this difficulty.

It will be noticed by referring to the drawing that the base or horizontal leg of the triangle is bored with numerous holes for adjustment to get the exact leverage required.

The action is somewhat similar to the leverage of the old-fashioned walking plow handles.—Herbert A. Shearer.

Straight Garden Rows

WHILE planting cabbage plants by means of a rope stretched across the field from one stake to another, I realized a good deal of time was being lost in stretching and moving the rope and stakes for each row. After a little study I removed the rope and used only a few stakes to designate the next row. I took a position at one end of the row and looked along the stakes towards the other end, then by walking slowly and dragging one foot along the ground, I could make a distinct, straight mark on the ground in which to set the plants.

I removed each stick when finishing the end of the row and placed it at the beginning of the next row. I found this an important saving of time and labor and with a little practice anyone can have as straight rows in garden and field as I have described above.—Albert Schlopback, San Luis Obispo, Cal. (H)

How to Patch Leaky Boots

THE tire vulcanizer from an auto repair outfit will serve quite satisfactorily in repairing leaky boots. On such parts of the boot as will permit of a full contact of the vulcanizer over the surface to be patched, a satisfactory repair can be made.

To apply the patch, clean the part thoroughly with gasoline, then get a good contact with the vulcanizer by forcing this part of the boot down upon the sole, so as to use the flat surface and take advantage of the resistance offered by the sole. Now, holding the vulcanizer against the boot securely, maintain this contact by clamping in a vise (as the screw that is used to clamp the vulcanizer is not long enough in this case).—Hans K. Hoerlein.

Wool Tying Box

TYING the fleece at sheep-shearing time is made easy by using a folding box.

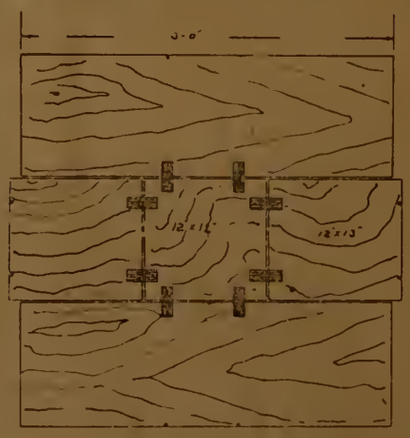
The wings of the box are hinged to a thick square of wood as shown in the illustration.

The strings are cut the right length and are stretched across the open box and the ends of the strings are pulled into the notches in the wings of the box as it lies flat on the wool-tying bench.

The fleece is tag-locked, trimmed, folded and placed on the center board of the box. The short wings then are raised to an upright position. The long wings are raised and clamped with the notched cross stick as shown in the small illustration to the right.

The strings are tied and the fleece is released and thrown into the sacking bin.

Only the regulation wool-tying string prescribed by the Woolgrowers' Association should be used.—Herbert A. Shearer.



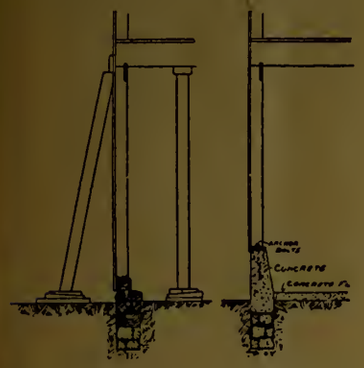
Box folded up

Working Drawing of Wool Tying Box

Repairing Sills and Posts

MANY old farm buildings have defective sills and posts. A leak in the roof allows a little rain water to accumulate in a joint, and the timber rots.

The drawing shows one of the easiest repair jobs on a farm building. This was a lean-to shed at the rear of a large barn. Water from the eaves had



settled around the old stone foundation wall and loosened the mortar from the stones and rotted the sill in places so the roof had settled several inches and had become quite uneven.

The drawing shows how the framework was raised and propped up with temporary timbers and wedges to level the roof plate at the eaves and to square the points. The loose stones of the old wall were removed and a new wall of concrete built in under the sill. Then, to complete the job, a concrete floor was laid the full size of the shed. —Herbert A. Shearer.

Water Resources

Continued from Page 6)

and making an appropriation therefor of $200,000.

Some 50 engineers or other employes of the State now are engaged in this study under competent and careful supervision. So far as organized, the work contemplates preliminary field studies of storage sites on every important stream system in the State; the gathering and compiling from both public and private sources of all available data on water supply, storage possibilities, reservoir sites, duty of water, use of water, hydro-electric development and possibilities, irrigation development, needs, and possibilities; and office study of all data gathered with a view to complying with the terms of the law as to determining maximum possibilities.

So far as is known, every public and private interest in the state having to do with waters and their development and utilization is heartily back of the Division of Engineering and Irrigation of the State Department of Public Works, which, under State Engineer McClure, has charge of this study.

The act of the Legislature providing for this investigation rather contemplated the determination of a comprehensive "plan" for the development of our water resources, in line with the thought that had gained some prominence in the State that such a comprehensive "plan," so interrelated as to form a whole, is practicable.

While technical judgment in the State generally has failed to consider such a "plan" as of practical moment, the need for the development of a more complete water policy is recognized by all.

That much more information than we now have, particularly as to storage possibilities, is needed before a proper State water policy can be developed is clear, and the only hope is that, with the relatively limited means at his command the State Engineer will be able to gather the large mass of information now lacking.

This additional information is needed so that any State policy of water development and utilization that is worked out shall be related to our physical conditions as they exist rather than as we might wish them to be.

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Depth of well?.....*Depth to water?*.....

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How many acres?.....

What crops raised?.....

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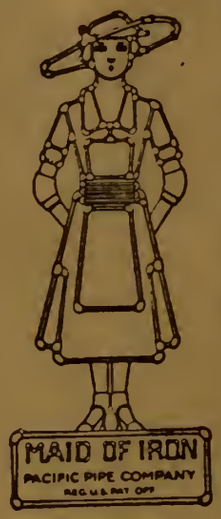

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Irrigation Development

(Continued From Page 6)

building. Both American and foreign capital was readily obtainable throughout the '80's and the prospects of large profits led to the organization of a large number of irrigation companies. These appropriated water and built canals in the optimistic hope of attaining independence in a few years by the sale of water rights and the collection of water rentals

They realized after it was too late that the bulk of the lands under the new system was held by speculators who would neither use nor pay for water; that the bona fide settlers were few in number and possessed of little means; that the maintenance of irrigation systems was costly and that it was the work of a generation instead of a few years to establish prosperous communities under canal systems. The construction work of this period was brought to a sudden end by the financial crash of 1893.

In time, however, conditions approached the normal and the West was slowly advancing on a rising tide of prosperity at the time of the passage of the Carey and Reclamation Acts. It is true the Carey Act was first passed by Congress in 1894, but, owing to defects and omissions in the law, little development was effected by it until 1901 The Reclamation Act was passed in 1902, and the operation of these two measures of constructive legislation, coupled with the achievements of other agencies, constituted the third period of irrigation development.

[Dr. Fortier's article will be concluded in the March number.—Editor]

Sunflowers

Picking Up What?

"How are conditions here," asked the stranger who was sojourning in the public square.

"My business is picking up," answered the park attendant, stooping to gather another armful of waste paper.

Square With the World

Casey—Did that lawyer prove yez not guilty of stealing that watch?

Murphy—He did that.

Casey—How did yez pay him?

Murphy—I gave him the watch.

—American Legion Weekly.

PROFESSIONAL JEALOUSY

These men with schemes to get rick quick,
Get my goat! They make me sick!
Of hoarded shekels they have stripped
So many fools I might have gyp'ed!
—Justin Nutt.

Consistent

"May I have the five dollars I lent you?"

"You may have it next week."

"You told me that last week!"

"Yes; do you think I'm a man to say one thing one week and another the next?"

The Leader

It was the custom of the congregation to repeat the Twenty-third Psalm in concert, and Mrs. Armstrong's habit was to keep about a dozen words ahead all the way through.

A stranger was asking one day about Mrs. Armstrong. "Who," he inquired, "was the woman who was already by the still waters while the rest of us where lying down in green pastures?"

—Metropolitan.

A Slow Process

"Does your wife practice economy,,"

"Oh, yes; she practices it. But she doesn't seem to learn very fast."

—Judge.

Not Unlikely

Weary Willie—I may be poor now, but when I was young I had me own carriage.

Leary Louie—Yep, and yer maw pushed it.

—"Topics of the Day" Films.

GETTING EVEN

For years she heard her husband say:

"Can't you make bread like mother used to make?"

At last she cried: "Of course I can, you jay. When you make dough like father used to make."

—Ex.

A Living From One-Half Acre

(Continued from Page 10)

Mrs. Jackson asserts, is much richer, and in her opinion, more delicious than that made from cows' milk.

However, goats are not the only livestock upon the Jackson ranch. A low shed shelters a series of rabbit hutches, the Flemish breed being raised for market purposes, and Mrs. Jackson says she has a steady demand for all she can raise. They are such prolific breeders and require comparatively so little care, that she considers them a profitable addition to even the smallest "ranch."

A flock of chickens; White Leghorns for eggs, and Rhode Island Reds for eating purposes, also occupy an alloted space in the half acre enclosure. Even with her small flock, Mrs. Jackson follows an approved system of feeding, and provides well-ventilated houses.

CUT FLOWERS PROFITABLE

Still the source of income on the Jackson ranch is not limited to fruit and livestock products. A bed of very fine dahlias at one side of the house, nets a monthly income during their blooming season of from $25 to $30, the cut flowers as well as the bulbs, being sold to local florists. Mrs. Jackson grows the fancy varieties so much in demand. In addition, many beautiful shrubs and vines make the grounds attractive and homey; a place in which to live and enjoy, as well as to work and accomplish.

A garden sufficiently large to provide most of the fresh vegetables required by the average family is planted in other open plots of ground. Corn, lima and string beans, tomatoes, onions and lettuce are produced. As a result, with the exception of potatoes, very few vegetables are purchased from the markets.

EVEN CORNERS USED

In the fence corners and spots where it is impossible to raise vegetables or small fruits, Elephant Grass has been planted to provide green feed for the goats, rabbits and chickens.

Swiss Chard as well as other succulent plants also are raised, replacing certain dry feeds that it would be necessary to purchase. Mrs. Jackson says she finds the goats and chickens are extremely fond of the Elephant Grass, and although it may be cut down to the roots many times during a season, it will grow up very quickly and thus provide a constant supply of green feed.

Mrs. Jackson and Mrs. Dowling do all the work about their "farm" with the exception of the spring spraying. Each year the trees are sprayed and pruned and any showing symptoms of disease immediately treated.

They said they enjoyed the work with the goats and rabbits as much as the cutting of the dahlias for market each day and the outdoor exercise has brought health and satisfaction. Mrs. Dowling informed us that her knowledge of "growing things" was gained through the study of ORCHARD and FARM and other farm journals, and authentic agricultural books and bulletins, of which she has a good sized library—as well as practical experience.

When asked to what she attributes her success she replied, "First, high class stock, bearing heavy crops, which in turn are produced only through the application of the best methods of cultivation; a systematic plan of planting; study, and last, but not least, a love for the work."

And a stroll through the "orchard" on the Jackson "ranch" during the season when the trees are bending under their burden of luscious fruit, surely proves her point.

"System" Contest Winners

ORCHARD and FARM, in sending checks to the following winners in the "System" contest, offers heartiest congratulations, at the same time saying a word of appreciation for the excellent work of the many subscribers who were not "in the money."

Poultry—First prize, A. C. THOMPSON, EAST SAN DIEGO, CAL. $15
In addition, Mr. Thompson is awarded, for the best all-around entry the sum of 10

Total $25

Citrus Fruits—First prize, D. L. VASBINDER, UPLAND, CAL. $15
In addition, Mr. Vasbinder is awarded, for the second-best all-around entry. 5

Total $20

Dairying—First prize, DAVID E. ROBERTS, TULARE, CAL. 15

Deciduous Fruits—First prize, GEORGE B. GIBFORD, RIVERSIDE, CAL. 15

Small Fruits—First prize, H. C. BATEHAM NEWBERG, ORE. 15

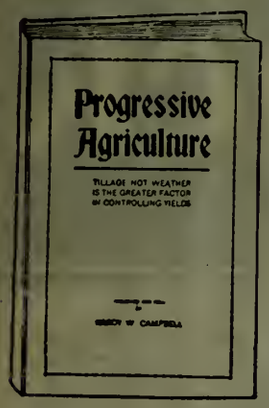
Miscellaneous—First prize, EMMA J. TORBERT, STOCKTON, CAL. 15

Additional Awards—In considering the remaining entries, the judges selected further prize-winners as follows:

Three Prizes of $3 Each:
- BERTHA WOODWARD RUST, GEYSERVILLE, CAL. (Poultry) $3
- WILL J. FREW, PORTERVILLE, CAL. (Citrus Fruits) 3
- S. H CARNAHAN, GASTON, ORE. (Miscellaneous) 3

Six Prizes of $1 Each:
- V. TROUTMAN, EL CAJON, CAL. (Citrus Fruits) 1
- EMMA J. TORBERT, STOCKTON, CAL. (Poultry) 1
- FRANCIS E. WILSON, LOS ANGELES (Poultry) 1
- ATNNETTE E. SAXTON, SHARP, NEV. (Poultry) 1
- MRS. J. EMERSON, AUBURN, CAL. (Dairying and Poultry) 1
- D. R. RUBLE, SALEM, ORE. (Small Fruits and Gardening) 1

TILLAGE—
Not
WEATHER—
CONTROLS
CROPS



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Barneson Ranch, Corcoran
California National Gas & Development Co., Angiola Cal.
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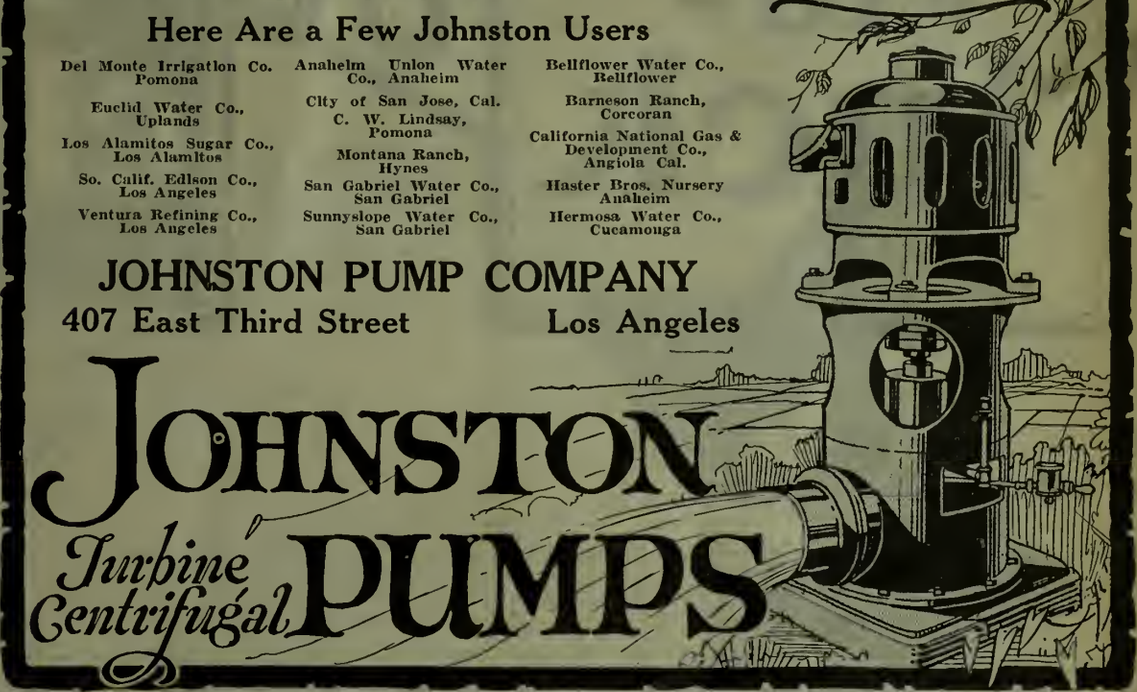

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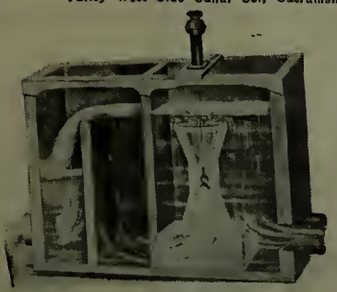
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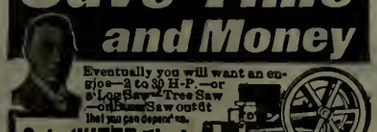

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You are in the poultry business to make money. The more eggs you get the more money you net. You must realize, then, that it takes an excessive amount of a hen's energy to convert poor feed into money as against converting good feed into money. So that—far from saving money—the only result of a "cheap" ration is a *higher cost* for each dozen eggs produced.

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ORCHARD and FARM

MARCH, 1922

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TEN CENTS

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See Page 5

HAS ORGANIZATION BENEFITED THE WALNUT INDUSTRY?—PAGE 8

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5

PRUNES *are so essential to good health and right living that physicians, dietitians, domestic scientists the country over are urging: "Eat more prunes! Know them better! Serve them oftener! They're good for you!"*

A famous food authority [and he doesn't grow prunes, either] comes out with this sweeping statement: "Every well-regulated family should come to prunes in some form at least once a day." Why? Because he knows that prunes supply something you can get in no other way.

All these years you've been eating prunes—but how often? Chances are, not nearly often enough. Just because you live in California—the home of the prune—isn't the only reason why you should eat more prunes. The real reason is a selfish reason: the more prunes you eat the better your health will be!

You can't beat Nature at her own game. Nature creates. Nature regulates. Nature's way is *always* best. Nature intended prunes for a purpose. Let Nature point the way!

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ORCHARD and FARM is a magazine of, by and for agricultural people. We believe that to the tiller of the soil is due the best that life affords. We believe that he is the bulwark of the nation. We honor him as the basic producer. His problems are our problems; his triumphs our triumphs; his joys and sorrows, ours. To record his achievements and expose the duplicity of his enemies; to fight for and with him; to give him genuine help and practical information, to assist, entertain and inspire every member of his happy household—that is the policy of ORCHARD and FARM.

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VOL. XXXIV Entered July 16, 1917, as second class matter at the Post Office of Los Angeles, California, under act of Congress of March 3rd, 1879. Subscription price $1 a year. NO. 3

Pithy Paragraphs

Some people are so sympathetic, they're always sorry for themselves.

Pity the man who can see nothing more in a beautiful sunset than its resemblance to a fried egg.

Uncle Wiseacre says in his day the girls liked to pluck flowers, but now they prefer to pluck eyebrows.

Ben Gonnadooit plowed around a boulder for 20 years. When he sold his farm, the buyer blasted the boulder and under it found a chest of gold.

"Get behind the Missouri mule," insists a booster from the "Show-me" State. But isn't it just as profitable—and much safer—to stand at the head of that industry?

Our idea of a hopeless enterprise: Publishing a dry farm paper for dry farmers.

We live and learn. But sometimes we live faster than we learn.

For that tired, discouraged, irritable feeling, there's no remedy like performing some little service for another. As a tonic to warm the cockles of the heart, it is better than anything that comes in bottles. It is a sure specific for an ingrown grouch, and a quick-acting antidote for the blues. But some folks' idea of a "helping hand" is one that helps itself—and then they wonder what ails them!

Jas. C. Kevin

Editor.

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The only knocker connected with ORCHARD and FARM is Old Man Opportunity. And he is knocking at each subscriber's door with some of the most astounding offers ever made by any agricultural journal. They are explained in the circular, inserted in your copy of this number. It speaks for itself; read it carefully!

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He Did Not Propose to Linger!

When Colonel Julep went hunting, he took along his servant, Mose, to carry guns, refreshments and game, if any.

"Better watch out for hornets here," warned the Colonel as they entered a dense thicket.

"Hohnets, did y'u say, Cunnel? Ef any hohnet ketches up wid me, he'll be too tired t' sting!"

Not all of us have as much confidence in our speed as Mose; in fact, all too frequently we don't get into action until after we're stung. But the main thing is never to be stung twice in the same place, and one way to avoid this is to profit by experience.

If you have had the experience of purchasing "orphan" merchandise on the representation of manufacturers and dealers who profess to sell for less because they do not advertise, you will need no further urging to buy on a known basis. This may be accomplished by reading advertisements regularly. For the individual or company making or selling an article of true merit is proud to advertise, and to follow up the advertising with service.

Use this convenient directory as a means of increasing your knowledge, broadening your outlook, and supplying your needs intelligently. *"You haven't read the magazine until you've read the ads."*

Alphabetically Arranged Advertising Directory

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Among 'Ourselves

Two men and a girl in a car on the desert, with the thermometer registering 20 degrees below zero! What has Fate in store for them, there in the wind-swept wastes of "Lonesome Valley"? Action is swift in Albert J. Mason's thrilling western story—page 10 of this number.

In the April number "Bob" Jones will tell the wonderful story of Placer County's orchard development, and incidentally give some mighty helpful pointers on irrigation and fruit growing. Another April feature will be the story of a California ranch that has achieved fame almost over night, partly because of the reputation of its noted owner, but largely because of the months of planning that preceded its amazingly rapid development. If we told you the owner's name, you would recognize it immediately—even though you might not know he was a rancher—but we'll reserve that for an April surprise!

We've said it before and we still maintain "stoutly" that one of the most interesting and valuable features of ORCHARD and FARM is the Classified Market Place, pages 30-31. Seeing is believing! Glance over the "liners"—and you'll become a regular reader. By the way, ORCHARD and FARM publishes more classified advertising in each number than any other Western farm journal. Doesn't this suggest a means of disposing of articles or stock you may have for sale? See page 30 for details.

SUBSCRIBERS SAY:

Wouldn't Be Without It—We want to tell you how much we like ORCHARD and FARM. It is such an interesting paper, we would not like to be without it.—Carl Thut, Visalia, Cal.

Read With Pleasure—It has been a pleasure to me during the past year to be a subscriber to your useful magazine.—James Merry, Los Angeles.

Useful—We have found your magazine full of useful information.—Chas. Keane, Hinkley, Utah.

An Old Subscriber—Have taken your paper for seven years, or as long as we have been in the orchard business, and find it very useful.—Mrs. Harry Campbell, Paso Robles, Cal.

"What is it—a family row?"
"No, just a friendly scramble for the new ORCHARD and FARM!"

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Farm Buildings, Machinery, Etc.

REMEMBER first, it is what paint *covers* that you want to save — not merely a few cents per gallon in the purchase price of paint.

Note how the best paint spreads easier and covers more square yards than cheap paint does.

Figure in the *extra gallons* of cheap paint that you must buy, and the extra cost of application.

It means that cheap paint costs just as much as good paint on the house or barn.

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The paints we specify for farm use are the result of 72 years' experience in making paints and varnishes for every purpose. Made to stand the peculiarities of western weather.

The best materials—PURE PIONEER WHITE LEAD, pure linseed oil, zinc and color—are combined with long-time skill, in scientifically exact proportions.

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Cheap paints are costly—*in the long run*—good paints *save* money—*they protect.* Remember that when you buy paint. Don't allow surfaces to rot. It costs less to paint them.

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If you want to do your own work and get the best results, ask our Specification Department for *free advice.*

We'll tell you how to treat old paint, how many coats to use, what kind of brush, etc.

Use *Fuller Service* as well as Fuller Paints and Varnishes to insure good work.

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Send the coupon for "Save the Surface," a free book that tells why good paint is vitally important on your place—why your house, barn, silo, and machinery should be protected.

We'll send with it our small booklet of Fuller's Specification Farm Paints and Varnishes. You need both books. Send for them now.

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Please send me, without charge, a copy of "Save the Surface" and your small booklet of farm paints and varnishes.

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ORCHARD and FARM

VOL. XXXIV MARCH, 1922 NO. 3

Our New Bonanza---Hemp

NEXT in importance to the food crops are the fibre crops; and of these hemp, flax and cotton lead in value to American farmers.

Frequently hemp and flax are confused, even regarded as one. But as a matter of fact, although their fibres are practically alike and frequently mixed in spinning, they are entirely different plants. Still their fibres are so similar that, were the production of hemp increased, it would be possible in most cases to interchange hemp fibre and flax in linen manufacture.

Many believe that, with the perfection of machinery for handling it, hemp is on the verge of becoming the leading fibre plant of the world; it is considered one of the strongest and most durable fibres of commerce.

Many sections of California are admirably adapted to its culture; in fact, the hemp plant is said to grow here to better advantage than in any other State.

A fertile, friable soil of good lime content is required. The silt lands of the "Delta" section have proved especially suited to hemp production, although many other districts, including Imperial Valley, parts of the San Joaquin Valley and the warm inland districts tributary to Los Angeles, have been found to yield as satisfactory crops. Several thousand acres, it is reported, will be planted this year.

On the Rindge tract, in San Joaquin County near Stockton, in 1916 there were 1000 acres in hemp, which was increased to 4000 acres in 1918, producing 2500 tons. For many years Kentucky has led in hemp production, with Wisconsin usually second. Kentucky supplies most of the seed.

A remarkable attribute of the hemp plant is its adaptability to various soils and climates. From the Bay of Bengal on the Indian Ocean to Archangel on the arctic Ocean; from China around the world to Western America, it is grown with great success. It is one of the oldest plants cultivated by man. Under the name of "Cana" it was known during the period from 800 to 900 B. C. The derivation is shown in our word "canvas."

According to Herodotus, the Scythians, beyond the Caspian Sea, used hemp about 450 B. C. Hemp was one of the first plants cultivated by the American colonists. It was planted in New England as early as 1629. In 1775 it was introduced into Kentucky, and until 1845 or 1850 the clothing of practically every colored man or woman of the South was made from hemp, grown upon the plantations.

THE NEW ERA

At the beginning of the Civil War the hemp crop alone equalled in importance all the other crops of Central Kentucky. The reason for the large production in that State undoubtedly has been the availability of cheap negro labor. Low labor costs also have made it possible for foreign countries to market thousands of tons in America.

With the development of modern machinery, however, it has become possible for other districts to enter into profitable production. In fact the one thing that has prevented more extensive planting has been the necessity for "breaking" or separating the fibre from the woody portion of the stalk in order to deliver it in marketable condition. Until recently the problem has baffled inventive genius.

Of the many who have attempted to devise a hemp machine, apparently only one man—William A. Shely—has succeeded. Shely, although a Chicagoan, is a native of Kentucky, where he "grew up" with the hemp industry. He understood the problem thoroughly and has spent his entire life in perfecting a machine to the development of which his father and grandfather also gave their lives. The Encyclopedia Americana describes William A. Shely as the one inventor of 300 or more who has produced a successful hemp brake.

Even Thomas Jefferson is recorded as having tried to perfect a hemp brake in 1815. But since the time of Abraham no important improvement in the ancient process had been made, until the Kentucky family undertook the task, and succeeded.

True, there was "fluted roll" machinery for breaking hemp, but the Kentuckians, knowing that the spinners require long fibre which cannot be produced with this equipment, have stood by the old-fashioned hand methods. The fluted rolls, in fact, make mostly tow, and impair the tensile strength of the fibre. The Shely hemp brake, now perfected, delivers the fibre the full length of the stalks, unimpaired in tensile strength, and accepted on any market in the world. To the hemp industry it is conceded to mean what the gin has meant to the cotton industry! The capacity of the Shely machine is from 6000 to 10,000 pounds of fibre per day, and it is easily operated with the ordinary 7 to 10 horsepower tractor or electric motor. All gears are enclosed and run in oil.

One reason that the hemp industry has languished is that cotton machinery gave such an impetus to the growing of cotton.

Hemp is harvested by machinery and the cost of raising the crop is about equal to that of wheat, aside from the process of "retting." If planted at the right season in California (either February or August south of 35 degrees latitude, and May in the Central and Northern sections), the crop is unaffected by or resistant to spring and fall frosts. Two crops a year may be produced in the South. No cultivation is necessary after seeding. It is sown like wheat or oats.

The stalks are cut when in blossom. In order to dissolve the resins and gums which bind the fibres together and bind them to the woody part, the stems must rot or "ret," either by steeping in water or by leaving on the ground to be acted upon by the elements, before breaking. After breaking, the fibre is baled like cotton and shipped to spinners.

Hemp can be used in making everything from the finest of lawns, laces and thread to coarser articles, such as towels, sheets and carpet warp. There are in this country many pieces of linen more than 100 years old and today in good condition after regular laundering, which were made in European countries entirely from hemp.

No crop will respond more readily to careful cultivation and none is less exacting in its demands upon the soil. As a rotation crop with legumes and grains, hemp will give increased yields and will leave the soil mellow and free from weeds.

Recognizing these and other important factors, Dr. George P. Clements, widely known agricultural adviser for the Los Angeles Chamber of Commerce, has become enthused over the possibilities for hemp culture in California. In a recent communication to the editor of ORCHARD and FARM, Dr. Clements said:

"Hemp can be grown successfully upon practically all of the medium to heavy lands throughout the San Joaquin Valley, Antelope Valley, Palo Verde and Imperial Valleys and in some of the coastal districts. Not only should it be profitable to the grower, but also very beneficial to the soil.

"Hemp should be considered a valuable rotation crop upon all of our sedimentary, silt and 'dobe land. *Since it will withstand a great deal of alkali, it gives promise as a utility crop on land which otherwise would be of no commercial agricultural value.*

"The introduction into California of the mechanical hemp brake and chemical system of retting seems to have unlocked the door to one more profitable undertaking for the California farmer."

NOW IS THE TIME!

Why is there such pronounced interest in hemp growing at this time? Why is the perfection of the new machine so important now? The answer may be found in European conditions.

Hemp has been grown for centuries in all the countries of Europe. Until the war Russia was the greatest producer, with an annual planting of about 1,000,000 acres or about 80 per cent of the world's supply. Today Russia is producing less than one-third of her own requirements, authorities asserting she cannot regain her former position for many years, if at all. It is said the mills of Great Britain are alarmed as to where to secure their raw material.

In European countries, as a rule, the crop is grown as a "family affair," each peasant family producing a small acreage, and the labor item, therefore, being negligible.

This has made it difficult for Amer-

(Continued on Page 34)

A Pleasant Prospect for California

THE perfection of a wonderful machine—comparable to the cotton gin—now gives promise of rapid development of the hemp industry in this State!

Although hemp has been grown in California for years, the cost of producing and processing the crop has prevented extensive planting by general farmers.

With the installation of the patented "brakes," however, hundreds of "small" farmers, as well as large operators, will find it possible to participate in the handsome profits promised.

ORCHARD and FARM is privileged to take the lead in announcing important facts contained in this article. Our prophecy: You'll hear more and more about hemp in California.—Editor.

—Illustrations, Courtesy J. S. Laidlaw.

High Lights in the Harvesting of Hemp

Above—J. H. Wolden cutting hemp with reaper and tractor in the "Hudson" 400-acre field, Lincoln County, Kentucky. Below—Method of shocking after reaper, and view of the Shely hemp-brake, the machine which promises to revolutionize the industry.

For much of the information included in this article, ORCHARD and FARM is indebted to John S. Laidlaw and Dr. George P. Clements of the Los Angeles Chamber of Commerce. Certain facts are taken from California Annual Statistical Report for [illegible]. Additional information may be obtained by addressing the Editor of ORCHARD and FARM.

Modern Methods of Progressive Producers

By George P. Weldon

CONTRIBUTING HORTICULTURAL EDITOR OF ORCHARD AND FARM

POMOLOGIST, CHAFFEY JUNIOR COLLEGE OF AGRICULTURE

Fruit Growers' Co-operative Associations Making Lime-Sulfur Spray Material

DECIDUOUS fruit growers, especially those who have been growing peaches, are vitally interested in lime-sulphur spray, and are recognizing as never before, the necessity of annual spraying with this material, to keep their orchards in prime condition.

George P. Weldon

Where the application with lime-sulphur has been neglected, the reason often may be found in the fact that some growers have not felt justified in going to necessary expense.

The need of cheaper spray material is very apparent, and it is this need that has induced certain fruit growers' co-operative organizations to enter into the business of making insecticides.

HOME-MADE MIXTURES

Individual fruit growers have attempted from time to time to make lime-sulphur themselves, and while some have been successful, the practice has been abandoned by others as "too much trouble."

The various co-operative associations operating for the benefit of the growers, in many cases are manufacturing such spray materials as lime-sulphur. Several years ago the Chino Apple Growers' Association, near Chino, San Bernardino County, decided that it would be a direct benefit to the growers dealing with the Association, if they could purchase their lime-sulphur spray from their own organization. Consequently a plant was erected and equipped for the work.

This year the fruit grower may purchase his lime-sulphur from the association at a cost of 15 cents per gallon, which is at a saving of about seven or eight cents on each gallon purchased.

COST IS REDUCED

Recently the California Growers' Association, Inc., announced to the growers who are shareholders in the corporation, that this season they will manufacture lime-sulphur and sell it to the grower at a cost of 16 cents per gallon. They announce further that in the event the cost of manufacture justifies a lower price, a rebate will be made to the growers at the end of the season.

The question naturally arises: Can this spray material be made in such a way that absolute dependence can be placed upon it? In answer, it is only necessary to say that the formula is not secret.

The clear, liquid lime-sulphur solution is made by boiling lime and sulphur together at the ratio of one part of lime to two parts of sulphur. Boiling must take place for a sufficient length of time however, so that there will be a thorough combination of the lime with the sulphur, and when finished the liquid should test at least 30 degrees, Baume hydrometer scale.

Where live steam is available, little difficulty has been experienced in making a solution that will meet the test. Fruit growers, therefore, need have little fear that they are taking any more chances than when using a commercial product.

There never was a time in the history of the fruit business when so great a premium has been placed on the higher grades of fruit. Spraying is one of the things that is essential to quality, and anything which will result in more and better spraying will benefit the fruit industry in general, because of the better class of fruit that will be marketed.

Lime Sulphur Plant of The California Growers' Association, Ontario

Peach Curl-Leaf a Serious Menace

IT HAPPENS sometimes that certain troubles are so common, they are treated as necessary evils, largely beyond man's control. In the case of the curl-leaf disease of the peach, which concerns every peach-grower, control is not difficult, and heavy losses may be prevented by attention to spraying at the right time.

Notwithstanding the ease with which this disease may be controlled, it is recognized as one of the greatest menaces to the peach industry in California. Growers who have been in the business for years know of its disastrous effects during certain seasons; yet not all of them have learned how it may be controlled.

IMPORTANCE EMPHASIZED

The writer has emphasized the importance of lime-sulphur spray from time to time in his articles. At this season of the year it is hard to overestimate its importance, and in the case of peach leaf-curl, the application as the buds are swelling, will mean perfect control.

Last season an experiment was conducted by the writer, to determine the relative value of liquid and dry lime-sulphur. The results of that experiment were given in an article prepared for ORCHARD and FARM some months ago. It was found that one preparation produced as good results as the other, and growers may take their choice between the two.

VARIETAL CONSIDERATION

The curl-leaf disease is "partial" to certain varieties, while others are highly-resistant, if not immune. Our observations have shown that Elberta, Lovell, Sims and Muir are varieties that develop the disease in a bad form, while Ontario (Southern Tuscan), Tuskena (Tuscan) and Phillips are somewhat resistant. Salway is more highly resistant than other commercial varieties studied; in fact, no bad case of curl-leaf has been noted on this variety in Southern California.

Every season frequent inquiries are made as to the best time to make the application for the control of this disease. Good results have been secured by spraying as early as January 6.

No doubt it is better to wait until a little later, and the general rule is that the material should be sprayed onto the trees as the pink of the blossoms is beginning to show.

It is best to finish spraying before the trees burst into bloom, but lime-sulphur will not injure blossoms when they first open. Therefore, in cases where spraying has been delayed by bad weather, or for some other reason is late, no harm will be done if the trees are treated when partially in bloom.

Failure to spray susceptible varieties of the peach, may mean a heavy if not total loss of fruit.

Pruning Wound Treatment

VARIOUS things have been used in the treatment of cuts made in the removal of branches while pruning the orchard. A few years ago all books were recommending the use of lead paint; now other things are considered far superior; in fact, it is doubtful if lead paint of any kind is a good thing to apply to pruning wounds.

A few facts should be considered carefully when the work of pruning is being done. In the first place, the healing process will take place better underneath than on top of a branch; therefore, special care should be exercised in removing branches, preference being given to under cuts always.

Again, a vertical cut will heal more readily than a horizontal or nearly horizontal cut. Large stubs never will heal unless they develop sprouts with their foliage, to feed the wound. As a general proposition large cuts should be avoided.

DISINFECTION OF WOUNDS

Disinfection of wounds is fully as important as a covering of some preparation to prevent drying out. Therefore, large cuts first should be disinfected with Bordeaux paste, or cyanide of Mercury (1 gram to 500 grams of water), after which the surface should be covered with asphaltum or wax.

A good preparation for the treatment of wounds is ordinary grafting wax such as nurserymen use in their work. W. H. Volck, in experimenting on the treatment of apple wounds at Watson-

(Continued on Page 16)

Whitewashing Trees With a Compressed Air Pump. *(See Page 16.)*

PRACTICAL POINTERS
IN FEW WORDS
for Busy Farmers

March Is a Good Time to—Set out hardy plants; sow seed of asparagus and bush beans (in warm sections); make last planting of brocolli, endive, onion seed, kohl-rabi; plant radishes, lettuce, beets, carrots, onion sets, peas, rhubarb seed and roots, spinach, early tomatoes (plants), hardy varieties of corn. In warm districts, sweet potatoes may be planted, as well as turnips and pumpkins. It may be well, however, to wait until the latter part of the mouth for these, as well as eggplant, peppers, squash, pole beans and lima beans.

Quick action with the lime-sulphur spray characterizes early spring activity among the fruit growers. Brown mite, greedy scale, peach-twig borer and San Jose scale call for spring applications in many orchards.

Give barns, hog pens, poultry houses, and yards a thorough cleaning. Disinfect them. Remove harboring places and you will have fewer pests to contend with later on in hot weather.

Give horses that have been idle most of the winter enough light work to prepare them for summer operations; this will help prevent sore shoulders.

Furnish the young lambs some oats, bran, and cracked corn and choice clover or alfalfa hay in a creep, where they can feed unmolested by the old ewes.

Sows yet to farrow should be accustomed to the presence of an attendant about the pen; then help may be given at farrowing, without causing undue excitement and possible injury to young pigs.

Give the machinery and gas engines their final "once over." Busy season ahead!

Farm Storage Necessary in Bulk Handling of Grain—Erection of some type of grain bins and portable elevators on the farm for bulk grain, until it is desired to transport the grain to the railroad, is one of the necessary steps in the successful operation of the bulk method of handling, according to B. H. Crocheron of the University of California. Crocheron was one of the original investigators of the bulk handling method in place of the old sack method. In these investigations, he was assisted by C. J. Williams. Other steps necessary, which now are being carried out, as originally suggested by Crocheron, are the equipping of harvesters to hand bulk grain, the construction of local elevators, the establishing of a central warehouse terminal, which now is located in Oakland, and the equipping of ships to handle grain in bulk. Further investigations conducted by the California Farm Bureau and by private individuals show that metal bins are well suited to farm storage, as these bins permit the farmer to hold his crop until such time as the market is in good condition, prevent destruction of grain by rats and mice, and are a practical insurance against fire.

Diseased Carcasses Should Be Buried—When deaths result from such contagious and infectious diseases as anthrax, blackleg or hog cholera, the carcasses should be thoroughly incinerated upon the spot immediately after death. If left lying on the ground to be eaten or carried to other premises by buzzards and dogs, centers of infection will be started. Certainly the uninformed or willful disregarders of the law, if their farms are close to a watercourse, simply disperse of the dead animals, but spread the disease, by dumping the carcasses into the stream. This is a most serious offense to the livestock industry as well as a menace to human health.

Improper disposal of animals that have died of contagious and infectious diseases is in strict violation of the State law; but, not taking into consideration the legality of the case, it is only showing good business judgment and the proper respect and deference for the livestock industry, to prevent the spread of such diseases by thorough cremation of diseased carcasses. Just instill a little more religion into the business by treating the other fellow as you would have him treat you. A great and prosperous agriculture is dependent in a large measure upon successful animal husbandry, and the latter can be made possible only by the thorough control of contagious diseases.—A. C. R.

The Tractor Has Stood the Acid Test—The tractor industry has emerged, triumphant, from a trying period. Coupled with the months of financial depression has been an era of cheap feed, upon which horses and mules could be maintained economically.

A few narrow-minded false prophets have professed to see in this unusual situation, indications of the failure of power farming. The thoughtlessness of their statements becomes especially apparent during a season such as this. The ground is soaked as the result of our unusually heavy rainfall, and indications are that the precipitation will continue late in the season.

To the farmer, this means big yields, PROVIDED he can carry on his spring field work PROMPTLY when the soil is in the right condition. This is where the tractor "shines." Long hours hold no terrors for the iron horse; and it can cover a tremendous acreage in a surprisingly short time.

During the coming season the tractor farmer will realize attractive profits. This is especially true if he is one of the fortunate number who used the subsoiler last fall, thus preparing the drouth-hardened ground to absorb the maximum amount of moisture! And horses are rather helpless with a big subsoiler in dry soil.

Fortunately for those who need more power farming equipment, prices now are enticingly low. And with the present steady upward trend of grain, livestock and produce markets, many see justification for the immediate purchase of new equipment.

Yes, the tractor has stood the acid test. A few "orphan" makes have fallen by the wayside. But on the whole, the past two years have been clarifying to many who perhaps were a bit in doubt. And even though "Dobbin" (the Saints rest his faithful old soul), is essential to many farmers and valuable to others, with or without power equipment, nevertheless the tractor has created a place for itself that nothing else can fill. The GOOD tractor is with us to stay—in constantly increasing numbers!—J. C. K.

Flushing With Kerosene of Doubtful Value—The practice of flushing the working parts of an internal combustion engine with kerosene after draining it of old crank case oil has become so common as to be almost universal, but recently several authorities have come forward expressing their doubt as to the value of the practice.

The objections which have been brought forward are as follows:

First, a certain amount of kerosene is likely to become entrapped in natural pockets and troughs which are formed through details of the engine design, and when new oil is put in it will be diluted by the kerosene caught in these pockets.

Second, many engines which have circulating pumps above the crank case for the lubricating system require that the pumps be primed with lubricating oil to insure immediate circulation of the oil on starting. When kerosene is employed, it is not effective as a primer and it is difficult to start circulation.

Third, many operators will turn the engine for a few minutes with a starter, in order to make the flushing thorough. The effect of this on the engine is very detrimental.

Fourth, it is claimed by some that the gritty, abrasive particles which collect in the crank case are more readily disturbed and circulated when kerosene is used for flushing than otherwise. Naturally, the results of this cannot be good.

The frequent change of crank case oil is undoubtedly a strong factor in improving the performance of an engine and in adding to its life, but care should be used as to the method employed in making the change.—George E. Fuller.

The Theory of Lubrication—No phase of truck and tractor operation is of greater importance than that of lubrication. To run with dry bearings for a short time may cause as much wear and tear as would develop under favorable conditions over a term of years. Action of oil upon steel surfaces is thus explained:

"Even the finest steel surface, if placed under a strong microscope, will show thousands of jagged points like the teeth of a saw. When two pieces are rubbed together, these teeth lock with each other. They are ripped out, twisted, and others are pulled into their places.

"Something must be interposed between the surfaces to keep them from tearing each other to rack and ruin. And that something is oil. Oil not only fills up the thousands of minute depressions, but it actually interposes a film between the two surfaces. The moving parts of an oiled machine do not rub against each other, but against sides of a thin film of oil which keeps the jagged teeth of steel from coming in contact with each other.

"The molecules which compose oil are perfect globes. So, as a lubricant, oil not only has the advantage of being liquid and therefore flowing freely, but it practically places ball-bearings between all moving parts and reduces friction to the minimum."—George E. Fuller.

Poisoned Syrup Controls Argentine Ant—The most practical means of controlling the Argentine ant, which has proven a serious pest in many California orchards, is complete eradication by means af an arsenical poisoned syrup.

The poisoned syrup found most satisfactory is prepared as follows: Put 10 pints of water in a clean vessel over a low fire. When tepid, add 7 grams of crystallized tartaric acid, then 9 grams of benzoate of soda, and then 12 pounds of granulated sugar, slowly, while stirring to prevent burning. Slowly bring to a boil and allow to simmer for from 30 to 40 minutes. Remove from the stove and add water to compensate for evaporation. Stir 2 pounds of strained honey into the mixture before it cools, and then add ¾ of an ounce of sodium arsenite which has previously been dissolved in 1 pint of hot water and partially cooled before being poured into the syrup. Thorough stirring completes the preparation.

In orchard application, place approximately 1½ ounces of the syrup in a 4-ounce spice tin with a few strands of excelsior, and hang a tin on the trunk or a main branch of each infested tree. While applications may be made at any season when the ants are active, the preferred periods are spring and autumn.

Monthly inspections should be made and empty containers refilled. Tests show that the average cost per tree is between 4 and 5 cents. This method has proved equally successful in eradicating the ants about residences. Place the poison bait on each ant trail at intervals of 10 to 15 feet. Keep from children and animals.

This is Bert Kay, of Petaluma ("The World's Egg Basket")

ARE you reading Kay's practical poultry pointers, published exclusively in ORCHARD and FARM? See pages 20 and 21, this issue.

Kay is a shirt-sleeve poultryman who writes about practice rather than theory. He has been raising chickens successfully for more than 17 years.

Petaluma, where Bert Kay maintains his poultry farm, shipped 26,054,365 dozen eggs in 1921, and is called "the World's Egg-Basket." The illustration shows one yard only of Mr. Kay's extensive "plant."

Submit your poultry problems to Mr. Kay, in care of the Editor of ORCHARD and FARM. Read his articles regularly!

Thirty Years of Co-operation---Article Two of a Series

[The history of co-operative marketing in California extends over a period of about 30 years. The Walnut Growers' Association, although one of the younger organizations, is pronounced by prominent authorities one of the foremost co-operative institutions in the world. It is just entering upon the tenth year of its existence.]

Has Organization Benefited the Walnut Industry?

TODAY the walnut growers of California receive as much for their "culls" as they received for the cream of the crop a decade ago. Yet the price to the consumer has not increased proportionately. In this article, written especially for ORCHARD and FARM, Mr. Thorpe tells in an interesting manner, how this result was accomplished.—Editor.

By Carlyle Thorpe

GENERAL MANAGER, CALIFORNIA WALNUT GROWERS' ASSOCIATION

ORGANIZED as a child of necessity, after haphazard methods of independent marketing had been tried thoroughly and found sadly wanting, the California Walnut Growers' Association today embraces in its membership approximately 90 per cent of the total acreage and not less than 85 per cent of the growers! There is a local growers' association in every important walnut growing district of the State and membership is constantly increasing.

Carlyle Thorpe

During the last year more than 1500 acres, lying in several counties, were added to the co-operative system and fully that big an area, it is thought, will be added this year.

Written into each chapter of its history are events which helped lift the walnut industry out of chaos and place it upon a substantial business footing.

BY WAY OF CONTRAST

In 1911, the growers, acting independently, undertook to sell the crop for 12½c per pound, but the price was reduced to 9c, finally, to avoid a heavy carryover. Today the growers receive almost as much for their culls as they received for the cream of the crop a decade ago.

One of the big reasons for the popularity of the co-operative plan is that pooling the majority of the production enables one business organization to take charge of the output and thus to enforce careful grading and packing. Standardization is a thing which the Association has stressed and by doing so it has built up a trade name that is priceless.

Several years ago, when walnut peddlers corrupted the market by buying culls for a mere nothing, mixing them with nuts of fairly good quality and selling them in competition with standardized walnuts, the Association decided to eliminate the cull walnut from the market, and to that end it contracted for all the culls of its members and made arrangements to crack them.

BIG DEMAND FOR MEATS

Special machinery was built for this purpose, and in time the organization began packing hand-sorted walnut meats in airtight tins and glass jars. Today the association is unable to keep pace with the demand for these walnut meats, and the cull is bringing the grower a much better price than he used to get for it, and no longer is in competition with the standard pack.

It is a well known fact that walnut production in California has been doubling every four years, which means that the growers are compelled to sell twice as many walnuts. The only way to solve this problem is to get the public to eat twice as many walnuts in a period of four years. This can be accomplished by extensive, carefully planned advertising campaigns to create a greater appetite for the product.

The California Walnut Growers' Association, with 85 per cent of the producers under its banner, is able to engineer such campaigns, and also is able to manage its business in such a way that it can clean up the crop and make payments to the growers long before the holidays each fall.

During the last season, final payment was made the first week in December. The organization makes payments to the growers as fast as they deliver their walnuts to the packing house in the fall and hands them at least 75 per cent of the crop's f. o. b. value before it is shipped. There is no long wait for financial returns and the crop never comes back to the co-operator.

It is a significant fact that the 1921 crop was sold out "slick and clean" in a few weeks, at prices practically the same as those which prevailed during the war. The associated growers have been getting returns which have given them at least a fair rate of interest on the investment.

The 1921 crop was sold in record time and the cost of handling the output was surprisingly low, being only 5 per cent of the crop's f. o. b. value.

How the Walnut Growers Smashed Freight Rates

ONE of the epochal accomplishments of the season just closed was the big drive against high transcontinental freigh trates, which resulted in prompt relief. The association engineered a campaign in which it collected by auto truck at the various packing houses and delivered to the docks at Los Angeles Harbor 1,000,000 pounds of walnuts in less than forty-eight hours.

When this gigantic shipment reached the water's edge it was promptly loaded into the holds of two great steamers and shipped via the Panama Canal to New York and Philadelphia. The railroads were not given an opportunity to move a pound of the shipment, and in less than two days traffic officials of the transcontinental lines announced an immediate reduction of walnut freight rates amounting to 58 cents per hundred pounds.

This sharp cut in freight rates, which is the biggest reduction yet made on any food product, will result in a saving of at least $300,000 a year to the associated growers. Three hundred thousand dollars whittled from freight rates in a single season would just pay for the magnificent office and factory building which the association recently has completed at Seventh and Mill streets, Los Angeles.

By erecting its own office and factory building, the association has blazed a trail for many other co-operative organizations in this State and has again proved the efficacy of the co-operative idea. Only by united effort could the freight rate campaign have been carried through to success, and it required the same kind of solid front to carry the building plan through.

Today the Association has an imposing seven-story home, where all of its general business is transacted. The structure is commodious enough to take care of the organization's needs for many years to come, and the factory in connection with it is said to be the finest in Los Angeles. Its lighting and ventilating systems are regarded as practically perfect, and in it 700 young women are employed under ideal working conditions.

The methods of operating the California Walnut Growers' Association are best told by its president, Mr. C. C. Teague, who outlined them as follows for the Ways and Means Committee of the House of Representatives, some months ago, at a hearing on the proposed protective tariff:

FORM OF ORGANIZATION

The California Walnut Growers' Association is a non-capital, non-profit, one-man, one-vote co-operative growers' marketing organization, handling the product of its members at cost, and returning all proceeds to the growers, less actual cost of doing business.

The Association is composed of 38 local associations, each of which has a director in the central organization—the California Walnut Growers' Association. The local association owns and operates the plant for cleansing, grading, sorting and packing the crop of its grower members, and each individual unit is operated by a board of directors.

These local units are necessary because the average grower produces in less than carload lots, and the cost of preparing for market requires a large investment which can be accomplished only through the organization of the growers to provide facilities adjacent to where the plants are located.

The growers contract to deliver their crop to the local association and have the privilege of withdrawing 30 days prior to the date of the annual meeting each year, and the crops of all the locals are marketed by the California Walnut Growers' Association, which is managed by its board of directors and officers, all of the directors of the central organization being growers.

The Value of System and Standardization

THE entire crop of all the locals is standardized and shipped under the brands of the California Walnut Growers' Association. The central organization exercises supervision of packing by the locals and provides an inspection system whereby no nuts are shipped that do not come up to the high standards established by the California Walnut Growers' Association.

As the crop is a non-perishable product and as the quantity used by the average wholesale buyer does not exceed one or two car loads, it is necessary to have a reasonably stable market condition in order to create confidence in the wholesale buyer that his purchase can be sold at a reasonable profit.

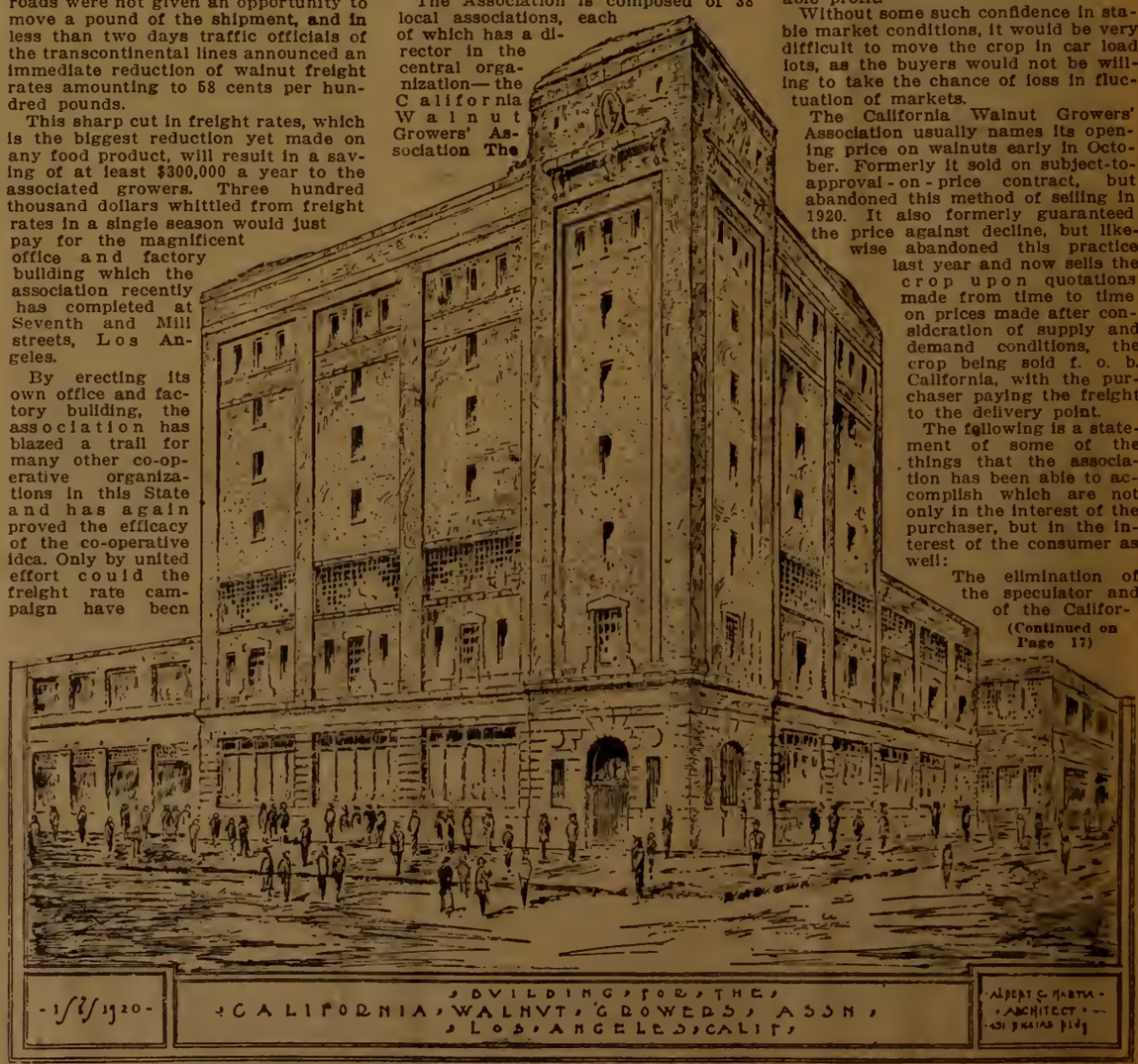
Without some such confidence in stable market conditions, it would be very difficult to move the crop in car load lots, as the buyers would not be willing to take the chance of loss in fluctuation of markets.

The California Walnut Growers' Association usually names its opening price on walnuts early in October. Formerly it sold on subject-to-approval-on-price contract, but abandoned this method of selling in 1920. It also formerly guaranteed the price against decline, but likewise abandoned this practice last year and now sells the crop upon quotations made from time to time on prices made after consideration of supply and demand conditions, the crop being sold f. o. b. California, with the purchaser paying the freight to the delivery point.

The following is a statement of some of the things that the association has been able to accomplish which are not only in the interest of the purchaser, but in the interest of the consumer as well:

The elimination of the speculator and of the Califor-

(Continued on Page 17)



New Home of California Walnut Growers' Association, Los Angeles

EDITORIAL DEPARTMENT

Timely Topics among Farm Folk

James C. Knollin, Managing Editor

What Chance Have the Bugs?

JUST how intense and specialized is becoming the war upon insects and crop-pests is indicated in a recent statement by Dr. R. W. Thatcher, director of the New York Agricultural Experiment Station. This eminent authority points out that the warfare against insect enemies of plants, animals and men must be fought by every means of destruction which science and ingenuity can devise.

The study of the effect of chemical substances upon the nutrition of man and animals has developed dietetics into a science of immense importance, and similar study of their effect in curing or alleviating disease, known as pharmacology, has been of untold benefit to the health of mankind.

"It requires no great stretch of the imagination," said Dr. Thatcher, "to conceive that similar systematic study of the relation of chemicals to the life processes of insects might easily develop into a science which would have a great corps of workers, a wide field of activities and immense economic results in promoting the warfare against parasitic insects." Researches thus far carried on in this field have dealt chiefly with the application of some of the common simple chemicals in the form of sprays, dusts or suffocating gases or liquids to insects, which are destroyed either by poisoning or by contact injury.

"There has been, however," said Dr. Thatcher, "comparatively little systematic study of the relation of the chemical composition of groups of substances to their insecticidal and fungicidal properties; and almost no study of the chemistry of insect nutrition and physiology from the viewpoint of the possibility of establishing environment unfavorable to their growth."

New Crop Protective Measures

IT BECOMES apparent that, as a result of Dr. Thatcher's suggestions, the fruit grower of the future, discovering a vagrant bug roosting upon his tree, will inquire into its personal habits. Upon referring to a convenient pocket directory, he may find it classified with the "Abhorrus Musicalus" species, which has been found to have a particular aversion to grand opera. Whereupon, he may simply set his phonograph in the orchard, fill the air with an aria by Galli-Curci and save the expense of spraying.

Or perhaps the itinerant insect, captured in the act of devouring succulent buds, may prove to be one of the "Influenzus Sneezencoughus" group, found by painstaking study to be peculiarly susceptible to drafts. How simple and inexpensive it will be to run the family air flivver out of its hangar, start the motor and blow a strong current through the trees by means of the revolving propeller. This, of course, will cause every Influenzus bug to sneeze its head off.

Yes, the possibilities of this new science are interesting. By studying the physiology of each species it may be possible to destroy many by extracting the teeth, so that their food, swallowed whole, will cause deathly attacks of acute indigestion. Or again, a little red ink might be mixed with the drinking water, causing certain light-colored species to take on a brilliant hue, becoming easily visible to their natural bird enemies, which would devour them.

Indeed, this is a great idea! More power to you, Dr. Thatcher!

This Readjustment Puzzle

APPARENTLY the opinion prevails in many quarters that the farmers are after special privileges and class legislation.

Generally speaking, this is not true. The farmers want simply a square deal; a chance to operate upon an equal basis with those engaged in other industries.

The farmers do not need or desire patronizing. Given a fair chance, they are capable of taking care of themselves.

Moreover, they realize that extension of credit can be of no permanent value unless prices of farm products are increased and those of other commodities decreased, or unless cost of farm production is decreased.

To extend credit to a business that is losing money is simply to postpone bankruptcy. Lending a farmer money to produce a crop that sells for less than cost of production is not solving his problems.

Included in the cost of production is shipping expense. In some cases transportation expense constituted more than [illegible] per cent of the cost of raising and delivering crops during 1921. Lower freight rates now in effect are aiding the situation, but still they are too high to be absorbed in present [illegible] prices. Therefore, either prices must be higher or [illegible] still lower—or both.

In [illegible] event the consumer of food must pay the bill; in the other event either the railroads or their employes. And if, as the railroads claim, they cannot reduce operating expenses without reducing wages, then railway wages will have to come down or the public will pay even higher prices for food.

During 1921 the most lowly railway employe who accompanied California agricultural products to market made more money than did many a hard-working, intelligent, self-respecting, American farmer who put in twice as many hours per day. In the simple words of Jeremiah Jones: "'Tain't right!" Now, who can solve the puzzle?

Big Business and the Farm Bureau

THE attitude of "big business" towards the American Farm Bureau Federation in some cases has become decidedly hostile. But this is to be expected. Any progressive organization which accomplishes things is bound to make some enemies.

And then too, the farmers, in "putting over" an ambitious program, probably have made a few mistakes which their enemies have capitalized and enlarged upon.

But, despite the occasional flurries that center around the activities of this great association, the soundness of its policies is admitted by many influential captains of industry.

Especially interesting in this connection is the remarkable endorsement of the Federation by George N. Peek, President of the Moline Plow Company, one of the largest American manufacturers of implements and tractors. In a recent address Mr. Peek said:

> "The American Farm Bureau Federation is the most important thing that has happened in American agriculture since the embattled farmers of Lexington fired the shot heard round the world. And I might go a step further, and say that such of its officials as I have met are men worthy of the occasion. There is nothing bucolic or radical in that organization. Its leaders take their place with the biggest men in our national life. They are moving swiftly, and without fuss and feathers, to stupendous results. The very elements conspire to aid and forward that splendid organization. It permeates the whole body of farmers and, directly or indirectly, is drawing them together in the most powerful organizations in America."

That the millionaire manufacturer has found the activities and principles of the Federation so sound and good will be encouraging indeed to those who constitute its vast membership.

Power Farming Again to the Fore

THE tractor, along with a lot of other good things, has "come back."

Not that it has really been "lost," but with most tractor companies, business has been slow. No farmer who has been operating during the past two years need ask the reason why.

However, there has been a big revival in the tractor and implement business. Prices have been reduced and banks are in a better positon to finance farmer-purchasers.

Another thing—while sales departments may have been slowing down, engineering departments have been speeding up, with the result that many improvements and advancements are noted in present models.

The farmer who needs a tractor (or who needs to replace his old one) and has a fair prospect for the coming season, no doubt will find a way to buy it this year. And he will get more for his money than has been possible for a long time. In fact, it is believed by many close students of the industry that prices on some makes and models have been reduced to an unnatural level which later will be adjusted upward. If this be true, the present-day buyer may count himself fortunate.

To extoll the virtues and potentialities of power farming is only a waste of space; these things now are taken for granted. Today it is not a question of "Do I need a tractor?" but "Can I afford to buy one?" And no doubt many who feel that they cannot, upon making some hasty calculations based upon reduced production costs and increased efficiency, will find that they can—and should!

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LONESOME VALLEY

by ALBERT J. MASON

ILLUSTRATED BY GEO. GRANT

MILES are long in Lonesome Valley—
Blasted hopes lie buried there;
And its winter wastes are dreary,
As its summer flowers are rare.

IT IS said Adventure beckons—
But who follows, pays the cost.
Bleaching bones in Lonesome Valley
Tell of those who played—and lost.

"JOHN, there's a gasoline barrel before that little house. Don't you think we'd better stop and see if they'll sell a few gallons?"

Barbara, leaning forward from her nest in the huge fur rug, placed a pleading mittened hand upon her husband's shoulder.

But without removing his gaze from the rapidly-filling road, the driver took a tighter grip upon the wheel and plunged the car into another snowdrift.

"John—please!" The girl raised her voice to make herself heard above the whir of the laboring gears. "It's our last chance. You know there isn't another inhabited cabin between here and Howell's Camp!"

No answer, except a roar from the exhaust. With a glance at her husband's set jaw, she snuggled again into her corner. Her cheeks, already tinted by the biting desert wind, seemed to take on a heightened color. Her companion in the rear seat, glancing at her over the collar of his fur coat, fancied he saw tears glistening on her lashes.

Soon the lone habitation was far behind them. Ahead, and to right and left appeared only an endless vista of white. The clumps of sage-brush and occasional dwarf-cedars had become mere hummocks beneath the deepening blanket. At each gust which forced the swirling flakes between the curtains of the car, the wind seemed to whistle mockingly.

Presently, the driver turned and shouted, "Can't waste any time exploring for gasoline! Anyway, I filled the tank before we left Blackhawk. We've plenty to take us through."

Now he was backing the car to make a new onslaught upon an enormous drift. Twice, three times, he drove headlong into the pile before it gave way. Then came a brief respite where a small plateau had been swept clean by the wind. But in every depression new barriers were building.

Start; bump; back, and start again! So it seemed, they had fought their way for hours. The air was so filled with the powdery flakes that they could see only a few yards on either side. Peering around the caked windshield, the man at the wheel had difficulty in keeping to the road, which at times seemed little more than a trough in a great, white sea.

As the day waned, the occupants of the car became conscious of a new and ominous chill. The wind died down. The fall of snow ceased suddenly. There was no twilight. With uncanny swiftness fell over Lonesome Valley the pall of a bitter winter night.

A click of the switch, and the beams of the headlights groped out into the mysterious darkness. At length, the man in the rear seat spoke for the first time:

"Are you warm, Mrs. Dean?"

"Oh, yes. I'm fairly smothered in coats and robes. But I'm so worried for fear we won't have enough gasoline! We're using so much, running in low gear this way. John," she called, "How far have we come?"

Her husband peered at the speedometer. "Registers a hundred and ten miles," he shouted. "But we've backed and slipped so much I don't think that's very accurate."

She turned again to her companion. "Well, John usually reaches his destination sooner or later. I've never known him to give up. But sometimes I get so exasperated with him. Nobody can tell him *anything*. I do hope—"

She paused as the engine sputtered strangely. Apprehension suddenly blanched her cheeks. The driver shifted into neutral and was rewarded with a renewal of the welcome roar. But in a moment, the sputtering again; then a loud back-fire; a chug or two; a sickly cough; silence.

TIFFLY, John Dean unfolded his long legs, and let himself out under the curtain. Presently, grave and a bit pale, he appeared besides his wife.

"No gas," he announced laconically.

"Oh! Oh! Oh!" Barbara almost moaned. "What shall we do! It may be months before anyone passes this way!"

"But surely," ejaculated the man in the fur coat. "Surely, if we wait here, someone will come along and pick us up."

"It isn't likely," was the only comfort Dean offered him.

"My God, man! What is there to do? Didn't it occur to you we would use more gas, running so long in low gear? I should think—I should think—" His voice trailed off into a quavering murmur. He moistened his dry lips and stared wild-eyed about him.

Dean seemed to ignore the man entirely. Switching off the lights, he climbed upon the running-board to survey the situation. The rising moon cast an uncanny half-light over the scene, and reflecting against the virgin snow, dimly silhouetted the distant hills.

"I can make out the landmarks all right," he announced. See those three buttes? Howell's Camp lies at the base of the center one. It can't be more than ten or twelve miles. Barbara, I'll have to walk. That's all." He took his seat again and began to tighten the laces of his boots.

Terror stricken, his wife threw herself forward and clung to him. "Oh, John, John! I am so frightened. I can't stay here. And the snow is so deep—What if—what if you shouldn't—." She shuddered and sobbed, as he put his arm about her. "Oh, if anything happens to you, John——."

The man in the fur coat, white-lipped, all but whimpered, "Dean, its suicide for all of us. What if you don't make it? What will become of Mrs. Dean and me?"

Apparently the older man had not heard him. "Now Barbara, if you and Mr. Deering will stay bundled up in the car, you won't suffer from the cold. I'll make as much speed as possible, yet it may be four or five hours before I can get back with a truck or a team. But—I mustn't lose any time!"

Slipping off his glove, he extended his big hand. "Goodbye, Deering. I leave my wife in your care." His penetrating, blue-gray eyes held those of the other man until the latter turned away, mumbling something into the collar of his coat.

Gently, John kissed the girl who clung to him and, pushing her back into the seat, drew the shaggy robe about her shoulders. "Goodbye, sweetheart. Be brave," he whispered—and quickly slipped away.

THE little mining settlement known as Howell's Camp, was forty miles from Argus, the nearest railroad point, and was accessible in winter only by sleigh and team. The road from Argus to the camp skirted the western border of Lonesome Valley.

A few miles beyond Howell's lay one of John Dean's stock ranches. Here he maintained a luxuriously-appointed lodge, famed for its hospitality, and a favorite rendevouz for John and Barbara and their city friends. In fact, most of their summers had been spent there, and frequently they staid a few weeks during the winter months. In the latter event, it was their custom to take the train, running over a branch line to Argus, thence traveling to the ranch in a sleigh.

But on this occasion, as on others, Dean's stubborness and strong will had got the better of his good judgment. His was a nature that liked to "take a chance." And against the advice of all his friends and associates, he had struck out over the desert road from Blackhawk—a lonely trail that ran far north of the railway and cut off many miles from the tedious journey.

On previous winter visits by train Dean had telephoned his foreman to meet them at Argus. But now, thinking to make the direct motor trip in half a day, he had not even announced their departure. For all the ranch folk knew, their employer might yet be at the beach resort where last they had heard from him. Likewise, the mine crew knew little and cared less as to his whereabouts. They, indeed, lived in a world apart.

They might as well have been a thousand miles, instead of perhaps two hundred, from the balmy southern shore—these ten men and four women who comprised the little winter colony at Howell's! Yet, perhaps because they knew no different life, they found ways to be content despite their mountain isolation.

For example, it was not unusual, in the event of a special entertainment, for the entire population of Howell's to drive to Argus and spend a week-end.

On this very day, indeed, a dance at the Argus Hall had brought about almost a complete exodus. In fact, only big Jerry O'Neill and Bill Jerome—newcomers who had pleaded unacquaintance—remained to keep a lonely vigil.

For a time the two grizzled miners sat before the big base-burner in the bunk house and smoked their pipes.

"Ain't this a God fersaken country!" presently growled the man known as "Bill."

"Fersaken! Say! He ain't never *discovered* it yet! Bill, sure, did ye hear them coyotes howlin' last night?"

"Did I! I thought some of 'em was usin' megaphones. There ain't *nothin'* ornerver 'n a coyote!"

"Unless," supplemented Jerry, "Unless it's a *human* jackal! I've known some two-legged beasts, which, if they was caught in a trap, the *regular* coyotes 'd come along and spit on 'em."

He lowered his voice, leaned closer to his companion and placed a great, knotted hand upon the other's knee. "Once I accounted fer one o' them myself, Bill. He tuk advantage of a good woman. But now he'll never talk an' what *others* don't know won't never hurt *her*. Well, what d'ye say we turn in?"

They arose and knocked the ashes from their pipes. "Ten o'clock," yawned Bill. "Now don't you wish you was trippin' the light fantastic in Argus, instead o' shiverin' around this here camp?"

"G'wan," replied Jerry, closing the damper of the stove. "Sure, all th' Saints couldn't make a dancer outa me—that is, exceptin' maybe one."

"And which is that?"

"St. Vitus!"

STUNNED, for the moment by the suddenness of the tragedy that had befallen them, Barbara strained her eyes in an effort to follow the towering form of her husband. Already he was fading from view, plodding resolutely towards the distant buttes. Never had she known such a surge of loneliness as now engulfed her. Dean soon vanished over the brow of a little hill. She began to cry hysterically.

"There, there," her companion comforted. "That won't help any. Why, John will be back almost before we know it." She allowed him to replace the robe that had fallen from her in her convulsion of weeping.

He was searching about on the floor of the car. "Here's the thermos bottle," he announced. "How would some hot coffee strike you?"

"Oh, why didn't I think!" she reproached herself. "We should have given it to John. I am so afraid something will happen to him! The drifts are so deep. It may be further than we thought. It is so bitterly cold!" She wrung her hands in another agony of fear.

And, indeed, Barbara had a better realization of their plight than did her companion. She had crossed Lonesome Valley in summer many times; had gloried in its desolation, at the same time, realizing its perils. And she knew that when the first great storm of the winter had drifted over its trails, men avoided these desolate wastes as a plague. Not until the warmth of spring had changed the white carpet to one of green, would Lonesome Valley know again the whir of motors and the creak of dust-covered freighters.

Barbara knew also that the few adventurous homesteaders who had dared to erect cabins there, long since had

(Continued on Page 22)

Chestnut Growing---A Little-Known Industry of Great Promise in California

By C. E. Parsons, Horticulturist

WRITTEN ESPECIALLY FOR ORCHARD AND FARM

Nature Has Placed a Wonderful Opportunity Within Our Very Grasp

AS YET free from the destructive chestnut bark disease, California seems to be the logical center for development of another great and profitable industry. Chestnuts already are being produced commercially in the Northwest, and conditions seem ripe for local planting. The writer of this article has grown and made a study of the chestnut In California for many years and is a recognized authority.—Editor

SINCE the chestnut bark disease has either destroyed or doomed the native growth throughout the Eastern States, chestnut growing now affords unusually attractive opportunities on the Pacific Coast.

The destructive disease which has prevented commercial planting in the East is not present on the coast, and rigid quarantine regulations, particularly in California, preclude its introduction.

An attractive local market is promised by the more than 300,000 Italians, said to reside in the Pacific West. Many Italians, in fact, class the chestnut with wine as an article of every day value in the diet. Not only the foreigners, however, but also American consumers of all classes, may be expected to use chestnuts in rapidly-increasing quantities.

A VALUABLE FOOD

For the possibilities of the chestnut as a valuable food are just beginning to be realized. Many have regarded it as a holiday luxury, but as a matter of fact, the chestnut has medicinal as well as food value. It is an easily-digested, energizing food, containing 10.7 per cent protein and a high percentage of crude fiber and ash, which together are said to aid digestion and promote intestinal activity. Furthermore, the chestnut is known to possess rare and valuable salts that aid in preventing hardening of the arteries.

The increasing interest in scientific eating and the growing number of vegetarians also would seem to indicate a profitable future market.

There are many delightful ways to use chestnuts, other than eating in the ordinary roasted form. Epicures are fond of chestnut dressing for fowls. The nuts may be used in salads, as a substitute for potatoes and as a thickening material for soups or other foods. Blended with eggs or other foods, they may be made into croquettes.

MUST BE COOKED

The chestnut never should be eaten raw. The nuts may be roasted, boiled or baked. The flavor is due to the oil content and is brought out by cooking, yet the nut should not be subjected to a higher temperature than necessary. More and more of the nuts are being used by American housewives.

The fact remains, however, that the majority of the crop is sold on the streets of large cities by hot chestnut venders who roast them over charcoal braziers and sell small glassfuls at 5 or 10 cents each. Growers, therefore, strive to produce an early-maturing variety which will strike the holiday market. Larger, later-maturing varieties, such as the Marrons, or so-called Italian types, are preferred for culinary purposes and therefore are suitable for later markets.

LARGE QUANTITIES IMPORTED

These larger kinds also are used by the Latin peoples. Even with the comparatively limited demand, which by means of advertising and publicity, may be enormously increased, large quantities of oriental and Italian nuts are imported annually.

Practically all the chestnuts produced on the Pacific Coast are consumed here. The Eastern markets prefer the small American Sweets, although great quantities of the European kinds are imported. The West in fact, prefers the large European kinds and on this coast, it is difficult to sell the small American Sweets. However, moderate sized nuts or extra good quality, will sell after a special market is developed.

Jobbers and commission houses in the cities, as well as fruit stands and fancy growers, handle large quantities of chestnuts.

NEW TARIFF IMPORTANT

The market for Pacific Coast nuts will be opening up in the East if the new tariff law includes the increased duty on chestnuts requested by Senator McNary of Oregon (nearly 5 cents a pound), but at present European nuts can be sold on the Atlantic seaboard, duty and ocean freight paid, for less than the cost of production to our growers. This duty also protects Pacific Coast growers against Oriental chestnuts which sometimes are imported in such quantities that they must be sold at very low prices.

The chestnut is valuable, not only for its fruit, but also as a shade tree, growing naturally to a great age and size. It makes a noble door-yard ornamental. It is recorded that a great chestnut in Topworth, England, still standing in 1881, was known as a boundary tree in the reign of King John, 1199 to 1216.

Because of its habit of growth, the tree when planted in an orchard, should be given plenty of room to prevent future crowding.

ADAPTS ITSELF READILY

That the tree takes naturally to California soils and climatic conditions is indicated by the fact that in the gold mining towns of California, trees planted by the early settlers, still stand in full vigor and productiveness. In fact, it may be safely said that no fruit-bearing tree that thrives in California will stand more neglect and abuse than the chestnut and still produce regular and profitable crops.

It will be seen, therefore, that thousands of acres of rough land in the foothills and higher districts of the Sierra Nevada are admirably adapted to chestnut culture. A deep, well drained, light gravely soil is preferable, but chestnuts will succeed in heavy clay, if it is well drained and of good depth. Many mountain valleys, therefore, should be suitable. The red clay loams of the Sierras up to an altitude of three thousand feet and probably higher are exceptionally desirable, according to experiments conducted by the writer in Nevada County, Califor-

(Continued on Page 15)

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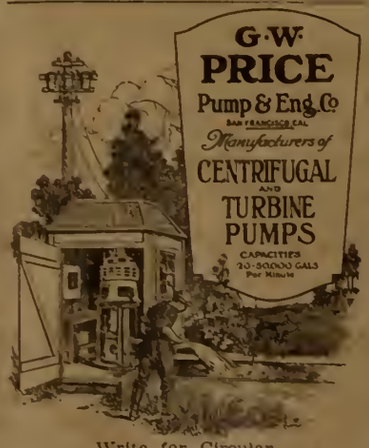

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Timely Tractor Tracts

By Walter H. Gardner

To Repair the Old or to Buy a New is the problem that many a tractor owner faces this month. Never have renewal costs been less. There are everywhere men who are competent to put old motors and machines into serviceable condition. Second hand parts are obtainable for many machines at a very low price. The oxy-acetylene and electric welding processes will restore tracks that seem hopelessly worn. But there is a lot to be said for scrapping the old and starting off with a brand new machine. For prices are back to reason; and improved design and added conveniences make the new machine more efficient than the old possibly could be. But the decision must be made—and he who waits until the last minute will lose precious hours of plowing time!

Walter H. Gardner

Tractor Prices Generally Have Dropped about 30 per cent from the war peak. this is not so great a reduction as the automobile manufacturers can boast of, but it must be remembered that tractor prices were not inflated. Indeed, a review of conditions indicates that many firms did not raise their sales prices sufficiently in the days when materials and labor soared faster than new price schedules could be printed. But only in a few instances have tractor firms made what seem to be final reductions. It is probable that pre-war prices on tractors will come on that day when renewed buying stimulates a quantity production and a consequent lessening of the necessary overhead on each machine manufactured. Yet there are many trsctors today offered at attractive figures—no longer is there a single company that dares to attempt to profiteer!

Several Makes of Tractors Are Today being marketed in isolated instances at drastic price reductions that appear to be below cost of production. Generally these are not standard models. There is no guarantee of service with them. Look out! Not but what the *machines* as they stand are worth the money, but one must remember that the tractor buyer isn't purchasing a *machine*, but a *service!* It is not so much weight of material that he wants, but so many hours of plowing! It is not a bore and stroke that he buys, but so many acres of work actually performed! And a tractor sold by an uninterested broker, or by a bank, or by a bankrupt concern is an *orphan* tractor. If interested service and adequate parts-supply aren't available, the machine is about as valuable as a safety razor without blades!

Sub-Soiling Was Widely Practiced this last fall. The next harvest will bear witness to the value of it all. In Ventura County in the late fall many a rancher found even the heaviest plow inadequate to break the dry soil. Several went over their whole fields with powerfu tractors and heavy sub-soilers. ORCHARD and FARM later will report the results as reflected by the 1922 yield. For this sub-soiling has wide possibilities—there is not a rancher but who may wisely keep an ear open for every bit of information available on this modern operation of farming.

Freight Car Robbery is very prevalent these days. Many a tractor arrives robbed of magneto and carburetor and even other parts—in spite of all the care that shipper and railroad may exert. In such a case the consignee should obtain on his bill-of-lading an endorsement from the station agent of the missing parts and damage; should wire in to the manufacturer his order for new parts to replace those that have been removed, and should place a claim with the railroad company for the loss. The manufacturer will help in the procedure, but the tractor buyer, as the consignee and the aggrieved party, must have the claim placed in his name.

Do You Know How to Stop a Motor, particularly in cold weather? Do you race the engine a little to draw a charge of gas into the cylinders so she'll shoot on the first turn in the morning? Well, that's the wrong way—and the writer didn't know it until he heard one of Professor Fletcher's lectures up at Davis the other day. You see, that was all well enough back in the days when fuel was more volatile and of higher gravity, when you "cranked a car from the side and got in at the back"—for then the fuel did stay as a gas in the cylinders until you got ready to "wind her up" in the morning. But what happens in the car of today when the last drop of usable motor fuel has been wrung out of the crude oil? Why, the moment the motor cools off a little, the heavier

Illustration Courtesy The Avery Company

The "Road Razor" in Action

Here is one of the newest tractor developments in operation upon a dirt road. It is known as the "road razor"—a name that seems well chosen upon the face of it, because the machine shaves away the rough spots in one operation. Photographs are "before and after" views of the same road.

gravity gasoline congeals and trickles down into the crank case, diluting the oil and cutting the oil-seal between ring and cylinder wall. And it does that same thing even in hot weather! So let's all follow the suggestion of Mr. Fletcher (he doesn't like to be called "Professor") and stop our gasoline motors by shutting off the fuel as nearly as possible, instead of racing the motor, before we switch off the ignition!

Girl Tractioneer

PINK teas and feminine foibles have little attraction for Miss Emma Harl of Fontana, Cal. She much prefers the out-door life of the rancher. And especially is she enthused over power farming.

For this 20-year-old genius does all the plowing, cultivating and general tractor work upon 156 acres of orchard land. She operates the tractor entirely herself and takes care of the machine, even to grinding the valves.

That she excels as a mechanic is indicated by the fact that her tractor is always ready to go and always "tuned up" to the point of highest efficiency.

In recognition of her expert knowledge Miss Harl receives the pay of two men (formerly employed to drive teams) whom she has replaced in doing the work in the citrus groves. For more than a year she has handled her difficult job with great success, and in this time has saved enough from her wages to make the initial payment upon a nearby orchard.

—Courtesy Tioga Tractor Co.

Miss Emma Harl at Work in the Orchard

It is her ambition to own and operate a citrus ranch of her own and thus to achieve a state of absolute independence.

A number of experts have paid her the compliment of pronouncing the orchards under her care among the best cultivated in the county. To her care and zeal in cultivating, in fact, is attributed the unusual freedom of the soil from gophers.

Miss Harl is the daughter of E. Harl, general manager of the Casmalia ranches. She has not sacrificed her natural womanly charm in carrying to success her unusual project. Nor does she care for the term "farmerette," even though she does choose to wear trousers!

Tractors Increase Yield

IN regions where beet growing is a big business, tractors have found a warm welcome. W. R. Bordges, of Salinas, Calif., raises beets on a huge scale and has two tractors. Mr. Bordges states that he has been enabled with the tractors, to adopt the most modern and improved methods of beet cultivation, having sufficient power for deep plowing, dependability which permits him to finish his work in proper season, and sufficient traction to pull trains of loaded beet-wagons out of muddy fields.

"I have had one of the tractors for five years, the other for six, and have been able to dispense with horses almost entirely," says this successful grower. "You will be surprised at the loads we have pulled and the amount of work we have done. One machine has drawn 24 feet of harrow, 24 feet of roller and 24 feet of weighted drag all at one time, with the machine in high gear. We use the tractors for plowing out beets, pulling two points at a depth of about [illegible] inches. In addition, we do all of our irrigation with one of the machines."—[illegible]rge [illegible]. Fuller.

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Delivered in California

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The new Model F Cletrac is a real all-round tractor. It plows, discs, harrows, seeds, cultivates, harvests and does all kinds of belt work. And consider that it is only 31 inches wide, 50 inches high, 83 inches long and weighs only 1820 pounds.

Its capacity for work is enormous—plows 6 to 8 acres a day—discs 15 to 20—harrows 20 to 25—and withal it is so simple, care-free and accessible.

A few minutes of practice and you have mastered its operation. Every part is easily accessible. An automatic oiling system makes oil and grease cups unnecessary. Chrome steel—the toughest material obtainable—is used for all parts subject to wear, and it is equipped with a sturdy, powerful 4-cylinder *kerosene, distillate or gasoline* burning motor.

The new Model F Cletrac is without equal for day in and day out, all-job usefulness and dependability. For utility, quality and price it is an unprecedented value.

See your local Cletrac dealer or write our nearest office for full information.

1. Handles every farm job.
2. Plows 6 to 8 acres a day using any 2-bottom 12-inch plow.
3. Every part subject to wear constructed of chrome steel—weighs only 1820 lbs.
4. Automatically lubricated—no grease or oil cups.
5. Simple, care-free design—burns kerosene, distillate or gasoline.
6. Every working part quickly accessible.
7. Unprecedented value at $875 complete.

Model "F" Cletrac is made in four sizes: 31 inches wide, with 8 inch clearance; 41 inches wide, with either 8, 14, or 18 inch clearance.

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These are but a few of the departments in ORCHARD and FARM "Classified Market Place." Note the many bargains and opportunities in this section of ORCHARD and FARM. Pages 30 and 31.

Extraordinary Novelties in Flowers and Fruit for 1922

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THE DIENER TOMATO

Most perfect ever raised. Firm, deep-red flesh; free from acid taste. Drought and blight-resistant. Flourishes in almost any soil. Price of the DIENER TOMATO SEED: sample pkg. 25c; ¼ acre pkg., 50c; 1 acre pkg., $1.50.

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Largest and most beautiful varieties ever created. Seed in the following colors: Pink, strong veined center; Red; Variegated; White; Red, black center; Pale lilac-pink, large veined center; mixed. For others, somewhat smaller than the Ruffled Monster, see ILLUSTRATED CATALOG. Any of the above, 50c pkg.

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"Bob" Jones' Corner

Little Stories of Farming

By Robert E. Jones

CONTRIBUTING EDITOR OF ORCHARD AND FARM

Safe Farming in California—A fine tribute to the safety of farming in California is given by the cold figures of the Federal Department of Agriculture, which shows that the Golden State again ranks second among the States of the Union in value of agricultural crops. Texas is first and only a little ahead of California. Before the distressing deflation of agricultural staples, California's normal rank among the States was about tenth to sixteenth, with such old stand-by States as Iowa, Illinois, Missouri and Ohio nearer the top of the list. But California's specialties did not drop with a bang as did the staples. In fact, fruit growers received generally during 1921 good prices for their crops. Of course, California's efficient marketing methods were an important factor in this. California is certainly the "safe farming" State of the Union.

Robt. E. Jones

Walker May Go Up—President W. H. Walker of the California Farm Bureau Federation is being mentioned quite generally for the presidency of the National Farm Bureau Federation should it become vacant. The situation is this: President Harding recently appointed Senator Kenyon of Iowa, a prominent member of the agricultural bloc, to the Federal Court. Report has it that President J. R. Howard of the National Federation is being seriously considered as a successor to Kenyon. Should Howard be appointed to the Senate, it is assumed that the presidency of the National Farm Bureau Federation would become vacant. The rise of Dr. Walker in National affairs of the farmer has been meteoric. He is a man of strong personality and energy and is remarkably effective on the platform.

Glen W. Gibson Passes—Glen W. Gibson, active head of the J. S. Gibson Company of Williams, died in Woodland in January following an operation for appendicitis. Gibson's death is mourned generally among pure-bred livestock breeders of the Pacific Coast, for he was known to them all as a man of fine character, energy and of sunny disposition. Gibson had a big heart and a kind word always for those with whom he came in contact. On the J. S. Gibson farm he had a fine herd of Holstein cows and a number of excellent records were made there. Gibson was a Stanford man in his college days and was a classmate of Herbert Hoover, now Secretary of Commerce.

Active in Peach Organization—J. A. Filcher of Sacramento, a veteran agricultural showman of California, but who now has retired to the farm, is taking an active part in organization work for the California Canning Peach Growers. For many years Filcher was manager of the California State Fair. He was also in charge of the exhibit of interior California counties at the Panama-Pacific Exposition and was in charge of California exhibits at most of the International expositions for the last half century, including those held in Europe. He was one of the first presidents of the Sacramento County Farm Bureau. Filcher says: "Solution of most of the farmers' problems will come through co-operation."

New Irrigation Project—Voters of Nevada County have favorably passed upon the proposal to form an irrigation district embracing 125,000 acres of foothill fruit land extending from the gold mining center of Grass Valley and Nevada City down into the Sacramento Valley. Under irrigation it is expected that this district would develop as a fruit growing and shipping district similar to Placer County, which now is one of the leading deciduous fruit counties of California.

"Looking Up," Says Guilford—Bill Guilford of Butte City Ranch says that the worm has turned and from now on things will "look up" for the farmer. Guilford is a keen observer, and, though not an old man, has had ample opportunity to observe the fortune, good, bad and indifferent, of farmers. "The demand for pure-bred livestock is on the increase," says Guilford. "I find that to be the case with us. Chicago markets show a better price for hogs and there is an increasing demand for wool. We have sold quite a number of breeding bucks. Barley has strengthened somewhat. Of course, we cannot expect a return to the prosperous conditions of war times, but from now on I expect to see the farmer's business on the up-grade."

Coast Dairy Show—Sam H. Greene, secretary-manager of the California Dairy Council, discussed progress of the dairy industry of California at the recent Stockmen's Week gathering at Davis. Greene has been an exceedingly active factor in the dairy industry for several years. He is responsible for the dairy products show recently held in Stockton and is hopeful that this event will develop into a Pacific Coast dairy show at which animals will be exhibited, as well as products. Whenever California, Washington and Oregon animals have been exhibited at a National show they have won high honors. With the three Coast States and British Columbia co-operating, a show could be put on out here on the Coast that would rival any in the world.

Cold Weather Helps in a Way—While the cold weather California experienced this season was hardly wanted, still it will have a benefit in the latter season for the irrigation farmers of the interior valleys. California's continent—in some California spots—and this snow provides water for irrigation through the summer. Snow must pack and freeze hard in the mountains to be most effective, for it then melts slowly and keeps up rivers and the irrigation supply until late in the season, when water is most valued. Weather men say that the snow is hard this year and it will take more than the usual warm spring rain to break it loose and bring it down to the streams. Hence it is expected that rivers will remain at good stages until late in the irrigating time. Hills about San Francisco bay are still damp and sloppy with the snow that has been recently melted from them. The oldest inhabitant cannot remember when there was such a blanket of white about San Francisco.

The Hindu Farmer—Quite a serious question among farmers of California has arisen regarding the unwelcome British subjects from India who are here and want to farm California land. The question is as to whether or not the Anti-alien Land Law, intended primarily to prevent leasing of land to Japanese and Chinese, also applies to the immigrants from India. This is a delicate question which has arisen before when immigrants from India have sought naturalization. The question is as to whether these British subjects belong to a race admitted to naturalization. If they do, then they may lease land under the law. Lawyers in many cities are now searching the books and tracing the history of the human race for a solution. Farmers from India, commonly known as "Hindus," have been quite extensively interested in rice farming.

The New BULLETINS

A NUMBER of valuable and interesting agricultural bulletins recently issued, will be sent free on request by the Division of Publications, U. S. Department of Agriculture, Washington, D. C. Order by number:

	FARMERS' BULLETIN
Standard Varieties of Chickens—(5) The Bantam breeds and varieties	1251
Permanent Fruit and Vegetable Gardens	1242
Home Production of Sugar Beet Syrup	1241
Utilization of Alfalfa	1229
Community Bird Refuges	1239
The Angora Goat	1203
Open Types of Public Markets	1002
Labor and Material Requirements for Field Crops	1000
Cultural Experiments With Grain Sorghums	976
Cost and Utilization of Power on Farms Where Tractors are Owned	997
Breeds of Light Horses	952
Poultry Management (revised)	287
Breeds of Beef Cattle (revised)	287
Castration of Young Pigs	780
A Week's Food for an Average Family	1228
How to Build Chimneys and Fireplaces	1230
Pineapple Culture in Florida	1237

The following standard bulletins, also obtainable free of charge from the same source, are recommended as of special interest during March:

	FARMERS BULLETIN
The Aalfalfa Caterpillar	1135
The Beef Calf—Its Growth and Development	1175
Care and Repair of Mowers, Reapers, Binders	947
Castrating and Docking Lambs	1134
Cattle Scab and Methods of Control	1017
Cutworms — Control in Corn and Other Crops	739
Farm Dairy Houses	1214
Farm Reservoirs	828
Management and Feeding of Dairy Calves and Other Young Stock	777
Hog Houses	438
Irrigation of Grain	863
Laying Out Fields for Tractor Plowing	1045
Milk Fever—Simple and Successful Treatment	206
Parasites and Parasitic Diseases of Sheep	1150
Raising Sheep on Temporary Pastures	1181
Road Drag and How Used	597
Use of Paint on the Farm	474
Transferring Bees to Modern Hives	961
Self Feeders for Hogs	906

The University of California, College of Agriculture, Berkeley, announces the publication of a number of helpful bulletins, which will be sent free upon application to the Director:

	BULLETIN
Selection and Treatment of Waters for Spraying Purposes With Especial Reference to the Santa Clara Valley	338
Cocoanut Meal as a Feed for Dairy Cows and Other Livestock	335
Preparation of Nicotine Dust as an Insecticide	336
Walnut Culture in California	332
	CIRCULAR
The Home Vineyard	231
Testing Milk, Cream and Skim Milk for Butterfat	230
Cordon Pruning	229
Plant Diseases and Pest Control (revised)	227

Chestnut Growing

(Continued From Page 11)

nia. Although exposure is comparatively unimportant, a southern exposure is least desired. For high altitudes and more northerly latitudes, earlier varieties should be selected.

Young plantings induced by observations of scattering old trees on this type of soil and at an altitude of three thousand feet have demonstrated the great promise of this rather neglected tree.

A twenty-five year old door yard tree in Nevada County, producing about 300 pounds annually, brings the owner from $45 to $60 a year. This tree is on volcanic ash soil (Alken clay loam).

I know of many trees in Nevada County which although neglected for years, never fail to bear large crops.

Anyone who has land adapted to chestnut growing, either with or without irrigating water, well may consider planting a few acres to approved varieties.

In the April number Mr. Parsons will [illegible] profits from chestnut growing, and [illegible] cultural phases, illustrated with photo[illegible]s of trees and nuts.—Editor)

WIZARD

A Revolutionary 4-Pull Tractor

With These Fundamental, Exclusive Advantages:

1. The only tractor with a rigid, 4-wheel drive.
2. The only tractor built without a single oil or grease cup.
3. The only tractor that is absolutely enclosed.
4. Has 35% reserve strength after delivering normal pull.

DEPENDABILITY

WIZARD 4-PULL TRACTOR

DURABILITY

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1. **Rigid 4-Wheel Drive.**
Shoes on all four wheels are set at an angle that literally gears them to the ground, giving the Wizard all the traction of a track type tractor, and under some conditions more; but, without the never-ending up-keep expense of the track machine. Steers by slowing wheels on one side. Most easily handled under all soil conditions.
2. **No Oil or Grease Cups.**
The Wizard is automatically oiled thru-out. Not a single oil or grease cup to fill. Hours of time saved every week.
3. **Completely Enclosed.**
Every working part—except wheels and fan—is absolutely protected against dust and dirt.
4. **35% Reserve Power and Strength.**
The motor—when doing normal work—still has 35% of its power in reserve. The rest of the Wizard is built with over-size parts to support this extra performance whenever needed. Bosch magneto. Timken mounted throughout.

A PROVEN TRACTOR

The Wizard is the result of 30 years of experience and development by practical tractor men. It is a **perfected tractor.** All the experimenting has been done and paid for by the manufacturer. It works 99% of your work day. It is the lowest priced per drawbar horse-power of any tractor on the market when days of work are considered.

We want you to know all about this revolutionary tractor. Send for the complete story of the Wizard.

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QUALITY

WATER!

Anywhere..Anytime!

Easy! Quick! Safe! Cheap!

"STANDARD" WELL-BORING OUTFIT

Bores wells by hand, 8 to 16 in. diam. up to 100 ft. deep. (See picture.) Satisfied users in 48 states. U. S. Government used thousands.

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The world's best gun at half the former price. Built like a Swiss Watch. Nothing better. Order while they last. Sent C. O. D.

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Has Been the Secret of Most Successful Men

There is no substitute for knowledge, which may be gained either by experience or study.

GEORGE P. WELDON, Horticultural Editor of ORCHARD and FARM, has devoted his life to study and practical experience in fruit growing.

And he possesses unusual ability to convey his knowledge to others in an interesting, convincing way.

Thousands of fruit-growers gain practical help and inspiration from George P. Weldon's articles, published exclusively in ORCHARD and FARM.

George P. Weldon

A Comprehensive Service to Subscribers

ORCHARD and FARM subscribers, through this exclusive arrangement, not only receive the benefit of his monthly contributions, but also have the privilege of submitting questions upon any horticultural subject. These Mr. Weldon answers by mail *free of charge.*

Long and Varied Experience

Mr. Weldon was "raised on a farm." He graduated from Colorado Agricultural College with degrees of B. S. and M. S.

From 1908 to 1911 he served as Assistant State Entomologist of the Maryland Agricultural College and Experiment Station.

From 1911 to 1919 he served in executive capacity with Western experiment stations and State agricultural departments, for many years being Chief Deputy of the California Horticultural Commission.

Author of Important Bulletins

Among Mr. Weldon's best known works are his books on "Pear Growing in California" and "Apple Growing in California," considered the most authentic and authoritative publications on these subjects.

He has succeeded as practical producer, writer, teacher and public official.

Remember:

GEORGE P. WELDON

Writes only for

ORCHARD *and* FARM

George P. Weldon

(Continued From Page 6)

ville, found the following preparation to be very effective:

Asphaltum, D grade, 8 parts.
Paraffine wax, 2 parts.

These ingredients are melted together until thoroughly mixed.

While wound treatment may aid the healing process, and may prevent infection from either fungus or bacterial organisms, the pruner first of all must exercise the greatest care in making cuts that will heal readily when given the proper attention.

Applying Whitewash With a Spray Pump

WHITEWASHING trees to prevent sun-scald is a practice to be recommended for the young orchard, and one which is not amiss in the case of older trees.

The application of the wash with a brush is rather a slow and laborious process. By the use of a small, compressed-air pump, the work is made much simpler, quicker and easier.

Whitewash with good sticking qualities may be prepared according to the following formula:

10 lbs. stone lime
1 lb. sulphur
1 lb. salt.

The sulphur should be added to the lime while it is slaking, so that a slight combination between the two may take place. The salt is not essential but increases the sticking qualities.

THIN WASH BEST

To prevent clogging of the nozzle with particles of lime or sulphur, the wash is strained through a galvanized window-wire screen, and used immediately after straining. It is surprising how thin a wash will make a fine, white coating when sprayed on the trees.

Forty pounds of lime made about 30 gallons of spray in some recent whitewashing work in the deciduous orchard of the Chaffey Junior College of Agriculture at Ontario.

Cory's Mammoth Blackberry

I am told the Cory thornless blackberry is superior to the Burbank. Can you give me any information on this matter?—John Scholl, San Francisco.

Long before the advent of the Cory Thornless, Burbank originated the variety which bears his name, but in this one instance at least he has been "out-Burbanked" by the creation and introduction of the Cory, which is incomparably superior.

The former grows upright, after the manner of the Himalaya, its fruit being small, late, insipid and very inferior in quality, while the Cory grows with a trailing propensity very like the Loganberry, only with greater lifeforce and vigor, and should be trained on a wire trellis.

The Cory is very early, large, sweet and luscious in quality, more like a well-ripened wild blackberry but with less seeds and core, and good judges of long experience think that it will become the most popular of all as soon as its sterling merits become better known.

Science Made Simple

By Adam Phule

[Editor's Note—Professor Phule, with typical scientific magnaminity, requests that the widest publicity be given his remarkable experiments. He desires no reward but the satisfaction of having served his fellow-men, and will be glad to answer questions of interested growers.]

Article II—Tortilla Vines and Tamale Bushes

DURING my extensive travels in Old Mexico, I conceived the idea of crossing the tortilla vine with the tamale bush, and producing both of these delicacies upon one plant. Realizing, however, that, if my experiments were discovered, the Mexican Government would not allow me to leave the country alive, I secured some excellent specimens and smuggled them across the border to an isolated desert cabin, where I devoted more than eleven years of painstaking study and care to the problem. Now I am ready to announce the happy result:

Prof. Phule

I HAVE SECURED AN ABSOLUTE CROSS THAT PRODUCES GREAT QUANTITIES OF BOTH FRUITS DURING TWELVE MONTHS OF THE YEAR.

How was the accomplishment brought about?

The solution of the problem hinged upon one important factor. As the reader is aware, direct sunlight is necessary for maturing the tortilla. On the other hand, when constantly exposed to the hot sun, the tamale, because of its great heat-absorptive powers and naturally high inner temperature, shriveled and lost much of its succulent quality.

MONTHS OF EXPERIMENT

For months I experimented and studied in an effort to find some way to focus the necessary heat upon the ripening tortillas without injuring the tamales. Finally, it dawned upon me that if I could develop a strain that would bear tamales first and bring these to quick maturity, the natural heat of the tamale might be sufficient to ripen the tortilla. Therefore, I set out an umbrella plant beside each hybrid tortilla-tamale, which furnished the necessary shade. Then I watered the young hybrids copiously, forcing to maturity the more succulent tamale fruit before the young tortillas were fairly started. Bereft of their natural sun-heat, the latter, nevertheless, grew rapidly, rounded out in perfect form and developed in great clusters, the heat of the tamales apparently being entirely adequate for producing tortillas of exceptional quality.

ONE MORE PROBLEM

There remained one important problem to solve, however. In crossing a vine and a bush, I found that the physiological attributes of the two types of flora became strangely intermingled.

In its normal habitat the tortilla vine, of course, exhibits a tendency to crawl and spread, the round, flat form of the fruit resulting from its contact with the ground. The tamale bush, on the other hand, is an erect, branching shrub, carrying its fruit in high-hanging clusters.

Imagine my consternation when I discovered a distressing tendency in the early crosses! The heavy tamales, reacting to the trailing habits of the vine, grew close to the ground, while the lighter tortillas, in response to the influence of the bush, were drawn upward, crushing the two together so that the tamale assumed a flattened shape and the tortilla became elongated.

THE ULTIMATE TRIUMPH

Knowing this would destroy the marketability of both fruits, I tried propagating the young plants in flats. This had the desired effect of flattening the tortilla. Then I inter-planted with turnips, which caused the tamales to turn up instead of down.

At last I had triumphed! Since then I have been approached by wealthy Mexicans desiring to offer me millions of dollars for seed or plants, but preferring to keep this new industry in America, I have scorned this proffer of pecuniary reward.

(In succeeding articles, Dr. Phule will describe more of his wonderful accomplishments. Watch for "The Electric Current" next month.—Ed.)

The Walnut Association

(Continued From Page 8)

nia broker, which has greatly reduced the selling cost and has accomplished a thorough distribution and put the business on a proper merchandising basis whereby the purchaser gets a fair portion of the price for which the product is sold. Conversely the consumer purchases at a reasonable advance.

SULPHUR BLEACH ABANDONED

The product has been standardized. Standard methods of grading, cleaning and packing have been established. The use of sulphur for bleaching purposes, which formerly injured the quality of the nut, has been eliminated.

The California Walnut Growers' Association has established a "standard of crack" and guarantees to the purchaser that the nuts will contain at least 88 per cent good, merchantable meats, but the average crack is over 94 per cent good, whereas formerly no attempt was made to standardize the quality, and the nuts furnished consumers frequently were of inferior quality. Power suction fans have been installed which remove blank and improperly filled nuts, the latter being cracked and sold as meats.

RIGID INSPECTION SYSTEM

An inspection system has been established which rigidly enforces these standards, no nuts being packed under Association brands that do not come up to the standard. The central association has an inspector in each local house who inspects all nuts as they are loaded into the cars and rejects all shipments that do not come up to the quality standard.

In October, 1920, when the opening price was named, a buyers' panic prevailed among the wholesale trade of the United States. Severe losses had been suffered on sugar, coffee, canned goods and many of the standard articles of consumption. Buyers were afraid to buy on account of the constantly declining market, except in very small quantities. Most agricultural products were not and have not since been moving, but were "dammed up" in the hands of the producer or packer.

The California Walnut Growers' Association named its opening price on October 8th, having previously advised all markets that the usual pro rata portion of the crop for each market was being reserved for distribution to that market. The opening price did not bring forth the usual volume of orders. The Association immediately, as fast as the crop was prepared for market, started it toward the usual consuming markets in about the same proportion of distribution as had been shown by experience of former years. Part of these cars were sold in transit the others were warehoused on arrival, under the name of the California Walnut Growers' Association, and were distributed as called for by the trade.

A HAPPY RESULT

The result was that buyers who were timid and afraid to order in carload lots were able to purchase a few bags at a time and did so, ordering frequently; thus putting into consumption the crop that would otherwise have been left in California on the growers' hands. The entire crop was sold out by April.

In contrast with this, a large portion of the crop of the growers not affiliated with the California Walnut Growers' Association was left on their hands in California, the usual speculator, on account of the uncertainty of the market, being afraid to buy and refusing to offer the producer much over one-half the real value of his product.

This illustrates how the old speculative system of marketing breaks down entirely under panicky market conditions and how important it is that growers' co-operative associations be maintained properly to market agricultural crops.

HEAVE HO!

Loading California walnuts at Los Angeles Harbor for shipment to New York and other points via the Panama Canal.

EFFECTIVE!

This answer to the rate question by determined growers, resulted in a big reduction in railway carrying charges and saved Association members thousands of dollars.

Every Farmer, Rancher and Orchardist Should Have This Valuable Book

Headquarters for Alfalfas, Clovers, Grasses, Vegetable and Flower Seeds

TOMATO

Morse's San Jose Canner

The peer of them all for our Western conditions. Seeds saved from only the best fruit.

Pkt., 15c; ½-oz., 45c; 1 oz., 75c; ¼-lb., $2.50;; 1 lb. lots, $7.60.

(Special Hand Selected Seed, $15.00 per lb., postpaid)

MORSE'S RESELECTED STONE TOMATO

Pkt., 10c; oz., 60c; ¼-lb., $1.80; 1 lb., $6.00.

Morse's Golden Self Blanching Celery

We have a limited supply of the best imported seed. Pkt., 15c; oz., $1.50; ¼-lb., $5.00; 1 lb., $15.00, postpaid. Buy your seeds direct from MORSE. Best quality Seeds. Write us for prices on large quantities.

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FREE TO HOUSEWIVES FREE

Here's a chance to earn a Conow Burner for your own coal or wood stove. Will you help to introduce this wonderful invention in your neighborhood? First: By using one yourself on a free trial basis. Second: By showing it to your friends, neighbors and relatives. Only a few representatives will be appointed. Big commissions. No canvassing.

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is absolutely the simplest "coal-oil-gas" burner on the market. California invention. Successfully used for three years without one complaint. Users enthusiatic. Heats stove, oven and waterback with one burner. An intense, even flame without roaring. Costs 3 to 4 cents per hour.

Write for particulars and testimonials to:

THE CONOW BURNER CO., Dept. B, 15 Columbus Ave., San Francisco

HERE, THERE AND EVERYWHERE W

Deep plowing is no trick for the owner of this heavy duty outfit, a four-bottom, fourteen-inch Emerson gang-plow. How many horses would it take to do the same job as thoroughly?

Low hanging limbs hold no ... this orchardist, who ma... work of plowing with his ... disc plow and the Inte... tractor shown.

Seeds are small as a rule, but not the tractors used to grow them. This "30" Best track-layer is at work on the John Bodger Seed ranch at Gardena.

This little fellow is said to have more concentrated pep per pound of weight than any of its predecessors. It's the new Cletrac model, of which hundreds already are at work in California.

These little seamstresses are laying the foundation for future success by learning in a farm bureau class the principles of sewing. In making their own clothing, they get the best kind of practical experience.

Peace and plenty are suggested by contented cows in green pastures, and, after all, the good old dairy cow seems to be the cha... distance mortgage-lifter. Crops may come and crops may go, but the milk supply must go on forever. Dairying, like all other ... agriculture, has its ups and downs, but it DOES seem as though the "ups" predominate.

Sub-soiling is the thing in most sections of California, and this baby "Catarpillar" is handling its heavy job with ease and dispatch. The chisel is a Killefer tool.

A "Wizard" for work is this four-wheel-drive Kroyer product. A heavy grade does not seem to affect its handling of the four-disc La Crosse plow.

Power to spare is the motto of the J. K. Hedges ranch at Covina, where the operations of discing and smoothing are combined, at the business end of a Yuba.

For orchard work some pin their faith to a wheel-type tractor. Among these is E. Hart, manager of the Cesmalia L. & C. Co., Fontana. This Tioga does all the work.

...h spading tractor. This strange da... ...ears to tear up three acres an hour, ...hes deep, consuming only one ...f kerosene an acre. (International

A good protector is this "lap dog," which appears to be considerably larger and heavier than its mistress. He is not nearly as "tough" as he looks! (International)

...ple fan is this white leghorn, Lady Victory. These are ...e she has won. Her record for one year is

A World's Champion Holstein. This two-year-old, owned by Fred Hartsook of Lankershim, Cal., recently broke the world's record for a 305-day test.

This is Judas—well named, for he is the goat in the employ of Morris & Co., Chicago packers, that leads thousands of innocent lambs to slaughter. After the "dirty work" is done, he is rewarded with his favorite confection—a plug of tobacco.

Germain's
FIELD SEEDS Grow in California

Why?

—because no strain is offered for sale until it has been thoroughly tested and tried out under California growing conditions.

We make a specialty of fancy, re-cleaned, pure-bred, high germination, true-to-type field seeds. A half century of intensive specialization is back of every pound you buy. Ask your dealer for Germain's PROVEN Seeds. They GROW in California.

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Write Dept. E for FREE 1922 Seed and Planting Book.

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Headquarters for PROVEN Field Seeds

Bert Kay's Poultry Hints

A Real "Model" Poultry Farm

WE ARE all interested when we hear a farm described as a "model." There is one such near me. This neighbor of mine, L. H. S., has one of the finest and best-managed places in Petaluma.

He was a city man, too. But he started right. In fact, I have found that those who have made the greatest strides in the shortest time in the poultry business are city-bred men. Why that is so, I really don't know.

Fourteen years ago a bookkeeper in Oregon, this neighbor of mine decided to come to Petaluma. Being a thrifty man, not afraid of work, and handy with tools, he bought 10 acres (which is a good sized farm for this district) and with that, a thousand pullets.

While building his home, he lived in a temporary shack and of course built his chicken house first. This house had a capacity of 700 chickens. You see he had the idea of the larger unit house such as most of them are building now—although there are still a great many of the old style houses in this district.

BUILT TO LAST

He built solidly and scientifically, and used the best material. Alongside of the chicken house he built a small house, about 10 feet high by 8 by 10 for the granary. To prevent rats and other wild animals from entering, he laid cement floors and foundations in both the chicken house and granary. To these he added roosts that could elevate with pulleys, while directly under the roosts was the chicken netting to catch the eggs, while the droppings went through on to the cement floor. This he cleans every week-end; in fact, he arranges for a man to come in and take it away for the fertilizer. Between the roosts and the front of the house(open like most of the California houses) he throws the yard dirt on the floor; this is cleaned out about once a month. You'll notice he doesn't have straw on the floor for his chickens to scratch around in when they are compelled to stay indoor, or when he lights the electric lamps in the early mornings.

LOCATION OF HOPPER

In front of the houses on one side is the feed hopper that is continually before the chickens. On the other side (front) he has the running water, inside and out. In the center is the "cluck jail," or coop for the setting hens.

For each house he has two yard-runs. He allows the chickens to stay on one side or in one yard while he grows green kale or barley, according to the season, in the other. This is seasonably alternated from one yard to another—all of which has the tendency to keep each yard fresh and rejuvenated.

After he built the first house and runs, he made each successive one the same style and shape, running them parallel to each other. Now he has seven. And running along back of the door at the end of each house where he enters for cleaning or gathering the eggs, he has a railroad narrow gauge track with a push car upon which he carries all buckets, gravel, feed, etc., that go into the chicken houses.

When he buys his usual supply of grain he has the feed men drive up to each granary and dump the feed. This eliminates much handling, for the reason that each house has its feed-bin.

NESTS FROM CANS

The nests are made of coal oil cans, with the tops cut out except at one side, where they are turned up for 2 inches to hold the eggs and keep the gravel from dropping out.

You see, instead of straw or shavings, he uses a light gravel to put in the nests; and never yet has he had to change it, nor does he have any trouble with vermin.

At the entrance to each house he has an egg record that he keeps up to the minute. On each card he keeps a record of every egg he takes out every day, as well the number of dead fowls.

Three years ago my neighbor built two brooder houses, with the same care and judgment, both of them with solid cement foundations and cement bins for the grain or mixed feed. In each house, that holds exactly 3500 chicks, there is an oil brooder stove, and under the roosts, that start at the floor and go up to about a foot above the floor all around, he has burlap. This is to prevent the little chicks from dropping through.

Instead of having square corners in the room he has them rounded to prevent crowding and sweating.

As soon as they are able to leave this room he turns the chicks into the other room, which has the same style of perches, only larger in proportion. It has netting under the perches instead of the burlap. And of course the rooms are larger in proportion to the growth of the chicks. In my judgment these are the most satisfactory brooders I have ever seen.

As for the capacity of the house—3500 in each—that is another question. But he has no greater loss than the man that has 1000 or 1500 in each house. For the little fellows that are likely to be wing or tail-picked, he has a separate compartment where they can have special care.

A REMARKABLE RECORD

That man made everything himself;

One Day's "Harvest" at the Great Corliss Poultry Farm, Petaluma

White Diarrhea

Remarkable Experience of Mrs. C. M. Bradshaw in Preventing White Diarrhea

The following letters will no doubt be of utmost interest to poultry raisers who have had serious losses from White Diarrhea. We will let Mrs Bradshaw tell of her experience in her own words:

"Gentlemen: I see reports of so many losing their little chicks with White Diarrhea, so thought I would tell my experience. I used to lose a great many from this cause, tried many remedies and was about discouraged. As a last resort I sent to the Walker Remedy Co., Dept. 487, Waterloo, Iowa, for their Walko White Diarrhea Remedy. I used two 50c packages, raised 300 White Wyandottes and never lost one or had one sick after giving the medicine and my chickens are larger and healthier than ever before. I have found this company thoroughly reliable and always get the remedy by return mail.—Mrs. C. M. Bradshaw, Beaconsfield, Iowa."

Cause of White Diarrhea

White Diarrhea is caused by the Bacillus Dacterium Pullorum. This germ is transmitted to the baby chick through the yolk of the newly hatched egg. Readers are warned to beware of White Diarrhea. Don't wait until it kills half your chicks. Take the "stitch in time that saves nine." Remember, there is scarcely a hatch without some infected chicks. Don't let these few infect your entire flock. Prevent it. Give Walko in all drinking water for the first two weeks and you won't lose one chick where you lost hundreds before. These letters prove it!

Never Lost a Single Chick

Mrs. L. L. Tam, Burnett's Creek, Ind., writes: "I have lost my share of chicks from White Diarrhea. Finally I sent for two packages of Walko. I raised over 500 chicks and I never lost a single chick from White Diarrhea. Walko not only prevents White Diarrhea, but it gives the chicks strength and vigor; they develop quicker and feather earlier."

Never Lost One After First Dose

Mrs. Ethel Rhoades, Shennandoah, Iowa, writes: "My first incubator chicks, when but a few days old, began to die by the dozens with White Diarrhea. I tried different remedies and was about discouraged with the chicken business. Finally, I sent to the Walker Remedy Co., Waterloo, Iowa, for a box of their Walko White Diarrhea Remedy. It's just the only thing for this terrible disease. We raised 700 thrifty, healthy chicks and never lost a single chick after the first dose."

You Run No Risk

We will send Walko White Diarrhea Remedy entirely at our risk—postage prepaid—so you can see for yourself what a wonder-working remedy it is for White Diarrhea in baby chicks. So you can prove—as thousands have proven—that it will stop your losses and double, treble, even quadruple your profits. Send 50c for package of Walko—give it in all drinking water for the first two weeks and watch results. You'll find you won't lose one chick where you lost hundreds before. It's a positive fact We guarantee it. The Leavitt & Johnson National Bank, the oldest and strongest bank in Waterloo, Iowa, stands back of this guarantee. You run no risk. If you don't find it the greatest little chick saver you ever used, your money will be instantly refunded.

WALKER REMEDY CO., Dept. 487, Waterloo, Iowa.
Send me the [ ] 50c regular size (or [ ] $1 economical large size) package of Walko White Diarrhea Remedy to try at your risk. Send it on your positive guarantee to instantly refund my money if not satisfied in every way. I am enclosing 50c (or $1.00). (P. O. money order, check or currency acceptable.)

Name .....

Town .....

State .....R. F. D .....

Mark (X) in square indicating size package wanted. Large package contains nearly three times as much as small. No wartax
—Advertisement.

aided, of course, where possible, by his wife (now has a boy). To show the comparative difference between what he actually has put into the place with what he was offered for it—he has invested $17,000 and was offered last year $42,000 for the 10 acres and 4000 laying hens—but he wouldn't sell. Why, I don't know.

That easily demonstrates what a man can do if he puts forth the effort and applys himself diligently to the business in hand.

Inspected Stock and Accredited Hatcheries

HAVE you heard of them? Well, the poultrymen of this district are "tickled to death" over the plan adopted by the Sonoma County Farm Bureau in their poultry department. They have arranged to publish a monthly list of what they call accredited hatcheries.

Already they have signed up 1,333,000 baby chick capacity, as represented by 13 hatcheries.

That leaves about seven more hatcheries who are selling baby chicks in quantity to sign up in this county. This plan is the result of an agreement entered into last October with several of the principal hatcheries of the county. The object of the agreement was to standardize, so far as possible, the supply of baby chicks, and to put the stamp of Farm Bureau approval on methods which would result in uniform quality of the best stock obtainable.

NEXT TO GUARANTEE

The Poultry Department of the Farm Bureau of Sonoma County makes no guarantee that the chickens from these hatcheries will produce hens laying 200 eggs, but states that insofar as is practicable under the conditions, the hatcheries and breeding plants supplying the eggs are using every effort with the latest methods, to produce good quality chicks.

A special inspector has been employed, who is visiting and inspecting every plant supplying eggs to the hatcheries and seeing that their fowls and poultry plants are complying with the following rules:

(1) Fowls used for breeders shall be in good healthy condition as judged by the inspector, and shall be culled so far as practicable, during the first period beginning November 1, 1921, and shall be culled thoroughly during the early summers of 1922 and 1923 according to the standards recommended and demonstrated by the Agricultural Extension Service.

(2) Females are to be at least 12 months old.

(3) Males are to be approved by the inspector as to vigor, and shall not be less than 8 months of age. The males to be used during the breeding season of 1922 and 1923, beginning November 1, 1922, shall have, in addition, trapnest pedigree records on the side of the sire of 175 eggs or better, and the males to be used during the breeding season of '23-'24, shall have a trapnest pedigree record of both the dam and sire of 175 eggs.

(4) No artificial lighting earlier than 5 a. m., or stimulating feeds to produce higher than 40 per cent during the months of December and January.

(5) Eggs to be delivered within 7 days, and precautions taken to prevent chilling or overheating.

(6) Weight to be 22 to 26 ounces per dozen.

(7) Eggs must be uniform in size, shape, color and texture.

(8) Ample supply of green must be given birds in inspected pens.

(9) Grain must constitute at least 50 per cent of total amount of grain and mash fed, and where fed in houses, litter must be reasonably clean, dry and loose.

GIVEN GREAT POWERS

In addition to passing upon the flocks supplying hatching eggs to hatcheries, the poultry department may withhold its approval from any hatchery where advertising or business methods are not, in the opinion of the executive committee of the Farm Bureau, such as can be fully recommended.

The establishment of the accredited list was brought about by a certain hatchery agent, who had the ability to determine the sex of the chicks a day old.

Away selling the pullets, which he

(Continued on Page 34)

McQUAY-NORRIS PISTON RINGS

Give Your Engine More Power—and Save Gas

Gas that leaks past worn or poorly designed piston rings is a dead loss. It wastes power and money. That's why it pays to replace leaky rings with McQuay-Norris equipment. It will increase power, save gas and oil, and decrease carbon trouble in any passenger car, truck, tractor, or stationary engine. The McQuay-Norris line is complete for every need. Through the addition of McQuay-Norris Wainwright Pistons and Piston Pins to the McQuay-Norris Piston Ring line, you can now secure for your gas engines complete McQuay-Norris-made Pistons, Piston Pins and Piston Ring equipment.

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Send for Free Booklet — a valuable explanation of the relationship of piston rings to gas engine operation. Address Dept. AK

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LEAK-PROOF — an exclusive two-piece design, preventing loss of gas and compression. Gives equal pressure at all points on cylinder walls. For all piston grooves except top, which should have Superoyl. Each ring packed in a parchment container—

$1.25
In Canada, $1.50

Superoyl — Keeps lubricating oil out of combustion chamber. Collects excess oil on each down stroke of piston and empties on each up stroke, which ordinary grooved rings cannot do. Each ring packed in a parchment container—

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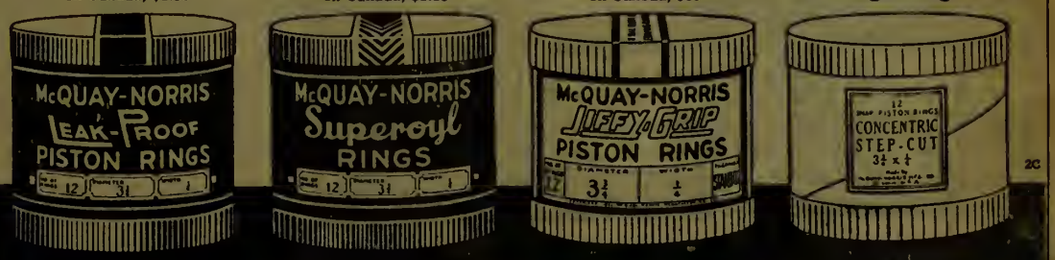
And Snap Rings of the highest grade



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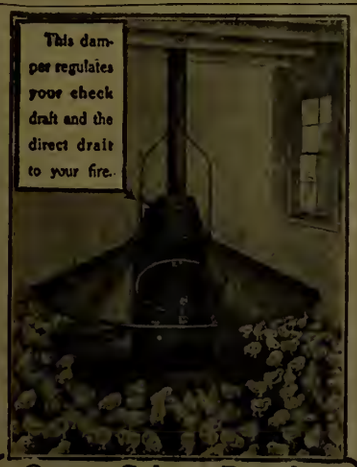

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Write for Catalogues and Prices
We display a full line of farm implements on our sales floor.

If you have something to sell or trade, why delay? A small classified ad in Orchard and Farm will complete the deal. The cost is low. See page 30.

Lonesome Valley

(Continued From Page 10)

given up the fight. Lonesome Valley, surrounded by rich, irrigated districts and bordered by prosperous towns, recognized no master and knew no pity for those who dared defy its power. These things, Barbara Dean knew only too well.

But she was a daughter of the West. And so many times had her husband's mighty will and powerful physique extricated them from dangerous situations that at length she found within herself the courage to face her problem.

Now the prayer she breathed was for the safety of the man who had gone forth with such determination upon his dangerous errand, and her fear for him diverted her mind from thoughts of her own peril.

"Lord, what a predicament!" ejaculated her companion. "You tried to tell him. I tried to tell him. Your friends in Blackhawk urged him to go by train. But he was bound to take the chance! Then when we had an opportunity to get some gasoline, he wouldn't——"

"Just a moment, Mr. Deering." With flashing eyes Barbara drew herself up haughtily and turned upon him. "Suppose we omit any further discussion of my husband. I didn't notice anybody else offering to walk to Howell's."

He flushed, and lowering his eyes, tugged at his mustache. After a moment he spoke in a low voice. "You're a bit hard on a fellow, Barbara. I'm sorry. I didn't mean to hurt you. But you said yourself——"

"Br-r-r!" she shivered, huddling lower in her wraps. "I'm getting so stiff and cramped. We might as well drink that coffee. It can't help poor John now."

Quickly he brought forth the bottle and poured for her a cup of the steaming liquid. He replaced the cork.

"But aren't you going to have some?" she inquired.

"I don't feel the need of it," he answered, after some hesitation.

"Now, don't be foolish, Fred," she chided, and taking the bottle from him, poured another cupful and made him drink it.

ALONE with her thoughts—and Frederick Deering—Barbara found herself reviewing the most trivial events of her past life. She wondered if John would understand should she tell him of all the incidents in her acquaintance with the man at her side.

As her occasional dancing partner during those exotic days at the beach; as the willing slave to her whims and fancies, the wealthy and handsome young lawyer had interested her.

Absorbed in his daring business deals, Dean apparently had taken no more notice of him than of the other members of the pleasure seeking crowd with whom his beautiful young wife had chosen, temporarily, to associate. In fact, John had asked only that she reserve for him the few quiet hours when weary from his travels, he dropped in for a week-end rest.

When Barbara, therefore, on the impulse of a moment, had suggested inviting Deering to visit them at their ranch, her husband not only had approved the plan, but added an immediate invitation as well.

The trip, by easy stages, from the seashore to the inland mountain district had resulted. A brief stop at their home in Blackhawk, where John maintained his office, and they had taken to the road again.

Now they were at least a hundred miles upon their way and far from any human habitation. The drifts were so deep and the cold so intense that none but a super-man could hope to battle his way to the outside world. Was John Dean equal to the task?

This momentous question gripped them with its terrible significance. But still resolutely they fought against the numbing chill—these idols of many a recent seaside party—and tried to focus their thoughts upon the hope of rescue.

FOR a long time the girl and the man in the car sat without speaking. At length Deering thought her asleep, but presently he heard her teeth chattering. Anxiously he peered at her. In the mysterious half light her face looked pinched, and he could see her lips were blue.

"Barbara," he cried, "you're getting awfully cold! Here, I'm going to jump out and look around a bit. I'll tuck the rest of this robe around you."

"B-b-but, you won't go far?" She shivered as she spoke.

"Of course not. Now, here, let me wrap you better. Poor little girl. This is awfully tough for you." He bent over with his eyes close to hers. She turned her head and did not answer.

Now she heard him running and stamping about in the snow. After a few moments he reappeared and lifted the side-curtain.

"It's after twelve, Barbara, and still nobody in sight. We can't sit still much longer or we'll freeze. I can see some sort of shack or cabin to the south. You won't be afraid to stay alone for a short time while I go over there? Perhaps it will furnish some fire-wood at least."

She nodded her acquiescence to the plan and heard him plunging off through the snow-laden brush. After what seemed an interminable age, she mustered up courage to step out upon the road. A cutting wind whipped about her ankles. She stamped her feet to restore the circulation and ran a few steps back and forth, then huddled to windward of the car and tried to see into the distance. Deering had disappeared in the shadow.

SUDDENLY Barbara's heart seemed almost to stop beating. Carried upon the wind, came a long, plaintive wail, followed by a series of short, sharp yelps. Then there was a veritable chorus of shrill barking, terminated by another heart-rending howl. Breathlessly she sprang into the car and buried herself again in the blankets.

Safe in one of the ranch houses, or snug under a camp tarpaulin with her head pillowed upon her husband's strong arm, Barbara had heard the coyote chorus many times before and had thought little of it. Now, however, it seemed to strike terror to her heart. It was hours, she thought, before she heard again the sound of crunching snow, and Deering sent her a loud "Hello!"

"Lord, did you hear that uncanny howling?" he cried. "Are we going to have a pack of wolves to fight?"

"Those were just coyotes," said Barbara, "and far away. But didn't they sound terrible?" She was trying vainly to control her chattering teeth.

"It was further to the cabin than I thought," continued Deering. "But here's good news: I found an old stove and some boxes and have built a fire. Come, we must go over there as quickly as possible. Ready? Let me help you out."

She laid her hand on his arm and gazed anxiously into his face. "Fred, what time is it now?" There was more than weariness in her voice.

The man avoided her eyes and answered huskily, "Two o'clock."

She stepped once more upon the running board and gazed long and earnestly toward the three buttes. As far as she could see was only that ghostly, interminable whiteness. "Dear God," she cried, in sudden terror, "take care of him—my husband!" Turning, she buried her face in her arm against the car, her body shaking with sobs. She would have fallen had not Deering steadied her.

Despite the trail he had broken it seemed that they would never reach the deserted cabin. Barbara, weakened by the cold and lack of food, all but frantic with fright and worry, fell again and again, at length hysterically begging him to leave her. Once they slipped upon a buried rock and she cried out in pain as her ankle turned.

He pleaded, insisted, commanded

And finally, despite his small stature and soft muscles, he lifted her bodily in his arms and with almost superhuman effort, struggled onward to the door of the cabin. Gasping for breath, he stumbled over the threshold and laid his precious burden upon his coat before the battered stove; then he leaned against the rough logs, panting.

Partially recovering his breath and strength, he chafed her hands and heaped more wood upon the fire. His eye fell upon a battered five-gallon can, which he filled with snow and set upon the stove. Then he plowed his way back to the car and gathered up the robes and wraps, thrusting into his pocket the tin cup and an electric flashlight.

Almost completely exhausted himself, nevertheless he fairly ran with his second burden, and, as he staggered through the doorway again, Barbara half opened her eyes.

DEERING'S first act was to hang one heavy blanket over the open doorway. Then he made a soft bed for her with the others. The room was growing warmer.

He shattered another box and replenished the fire. With the flashlight he searched a sagging cupboard, and was rewarded with a glass jar, containing a little tea of uncertain age. Another quart jar was nearly filled with dried beans. These apparently, were the only articles of food left by the former inhabitants.

Hanging upon a rusty nail above the stove he discovered a bent sauce-pan which, to his elation, proved to be water tight. In this he heated some of the snow water and made a weak solution that would pass for tea. He pressed a cupful to her lips.

"Thank you," she murmured wearily. "My feet are so cold, and my ankle—hurts."

Quickly he unlaced and removed her damp shoes. He saw that the right ankle was slightly swollen.

"Will you—can you take—?" he began. But her head had fallen back upon her coat-pillow and he saw that she was sound asleep. Without further hesitation, he bared the injured ankle and wrapped it tightly with strips torn from handkerchiefs.

She stirred slightly, and the neckpiece fell back from her throat, revealing against the black fur its rounded whiteness. He marveled at the childish delicacy of the hand that now clung trustingly to his. For fully a minute he knelt, gazing at her, then reluctantly released his fingers, tucked her coat and one of the robes closely about her, and stumbled out again into the night.

So intense was the stillness that he was startled by the squeak of crunching snow beneath his shoes. He glanced at his watch, easily-read in the light of the moon, which now hung like a great disc above. Three-thirty, and no sign of rescue.

Behind the cabin he discovered more scraps of wood. Dragging forth the chunks from the snow, he uncovered a rusty axe-head, with part of the handle intact. A half hour's feverish work netted a supply of fuel sufficient to last several hours. Then, spreading his coat upon the floor, and reclining against a box, he resumed his lonely vigil, determined if possible, not to succumb to the weariness that threatened to overcome him.

AND what of the man upon whose endurance depended their very lives? During the first hour Dean made good progress. His amazing strength enabled him to plow again and again through drifts into which he sank to his waist. His years as an engineer and stockman had given him a keen sense of direction and a quiet courage that recognized no obstacles. Abandoning the road, he had steered a direct course for the center of the three buttes.

They loomed against the moonlit sky, distinct and apparently no nearer than when he had started. He knew how deceiving are distances in the open spaces, and became aware that he must travel much farther than he had calculated. It would take every ounce of his strength.

He had discarded his heavy outer coat, and, heated by the strenuous exertion, dared not stop. His knowledge of the climate told him that the thermometer was registering at least 20 degrees below zero. Not for long could he expose his ears or fingers.

Now and then, stepping into a treacherous hole or stumbling over a clump of brush, he fell heavily, only to pick himself up and go doggedly forward. He began to wish he had brought a little water, but resolutely put aside the temptation to eat snow. The muscles of his legs gave him twinges of pain. His breath formed little icicles upon the collar of his sweater. So on and on he fought, holding always before him, the vision of his wife—waiting, trusting, believing.

Another hour—and still another passed. His motions had become mechanical. "Left, right; left, right." Painfully he thought out the military commands and forced his feet to move in rhythm. Once he stopped and laughed aloud—a strange, cracked laugh, which broke off suddenly when, at realization of his condition, he forced his mind again upon its single purpose.

Even his eyebrows were coated with clinging frost. His lips were swollen and black. And now when he fell, he blubbered like a baby.

"FOR her sake — give — me — strength!"

Lifting his hands to the stars, Dean whispered a despairing prayer. Then, once more he clambered to his feet. With shaking hand he wiped the white frost from his eyes and, swaying, fastened his gaze upon those maddening buttes. They were nearer now—yet still so far!

One foot he placed before the other, slowly, with grim determination. Then painfully, mechanically, he took another step. It was as though some undeniable force were lifting blocks of stone and placing them one before the other.

Long since he had lost all sense of physical pain. Only his driving willpower prevented his succumbing to the delicious drowsiness that lured him. Once he ran plump into a stack of hay. It seemed to him hours that he stood before it, fighting with himself. His aching body fairly cried out for the rest it promised. But to weaken meant that Barbara would perish. No, he would struggle on! He would repeat her name over and over; that would remind him constantly, he must not stop; no, never stop, until he summoned help—or died.

At length he lost for a time all consciousness of effort. He did not know how long he had walked or crawled forward in this condition. But finally he became vaguely conscious of the nearness of human habitations. It was while squatting on hands and knees that first he glimpsed a group of buildings. Yet the impression was so vague that for a time he simply stared like some wild animal poised to retreat.

But it was—it was a house! He would make one final effort! He got upon his feet, swayed, fell; painfully repeated the process. Oh God! He could not move. He must call! He must let them know! He put a last mighty effort into a despairing cry. But the sounds that came from his throat sounded in his ears as hoarse whispers.

Must he perish here within sight of his goal? Yet, why did he struggle on? After all, what was the use? Why had he so punished himself? He could not remember. It would be so wonderful to lie down and rest—oh, that luring drowsiness again! Suddenly John Dean pitched forward upon his face and lay in the snow as still as death.

(Watch for the remarkable conclusion of Mr. Mason's thrilling story in the April number.—The Editor)

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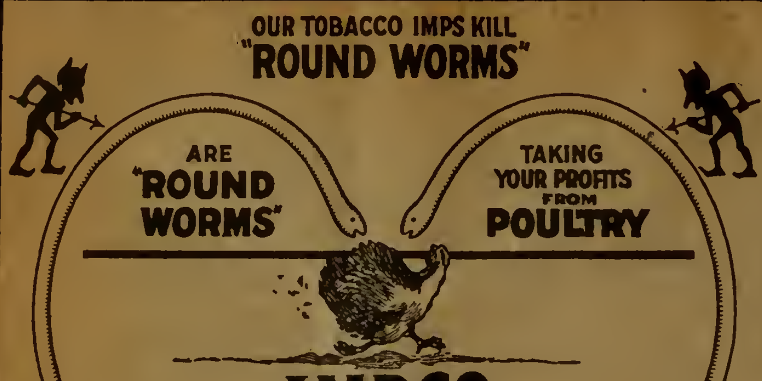

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SAVED THREE COWS BY TIMELY AID

Jacob Germann of Farmingdale, Ill., tells of his experience with cow ailments much the same as hundreds of others who take the trouble to write us every year. He says:

"I had three cows this Spring, one had garget and one had milk fever, and one was done up completely from calving and could not get up or walk and I had a veterinarian with no good results. I began feeding Kow-Kare and she is able to go to pasture with the other cows now. I just know I would have lost the three if I had not had your medicine."

D. B. Thomas of Knightville, Utah, had an experience with a barren cow that is just like scores of others who have kept cows on a paying basis with the aid of Kow-Kare. He writes:

"Had a valuable Jersey cow eight years old that had had seven calves. Something went wrong with her after her last calf came, so that for two years she failed to become with calf. Fed her some of your Kow-Kare last January and she was all right the first serving, and long before I had given her the whole package of your Kow-Kare that I purchased."

For the prevention or successful treatment of Barrenness, Abortion, Retained Afterbirth, Scouring, Bunches, Milk Fever, Loss of Appetite, etc., no cow medicine has such a record of constant successes as Kow-Kare. Every cow owner should keep it on hand. Sold by general stores, feed dealers and druggists at the new reduced prices—65c and $1.25

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Distributors for California,
GERMAIN SEED & PLANT CO.,
Los Angeles, Cal.

Ottawa $69

New Log Saw just built. Saws 8-in. logs as well as 6-foot logs. Start or stop saw—engine runs on. Use Four-cycle Engine for other work. Shipped from factory or nearest of nine branch houses. Write for full particulars today.
OTTAWA MFG. CO. 2351E Wood St., Ottawa, Kansas.

These Progressive Dairymen Follow Their Butter to Market

AT RIVERDALE, Fresno County, is located one of the most successful co-operative creamery enterprises in California, according to members who have sold their milk and cream through the organization for many years.

Features of the operation of the Association are the entire harmony that seems to prevail among the members and the success with which the Association in conjunction with other creameries, has carried on marketing operations in Los Angeles.

DOES BIG BUSINESS

At the twelfth annual meeting of the Association held recently, it was brought out in the report of Manager Jorgenson that nearly 1,000,000 pounds of butterfat in milk and cream had been handled during the year 1921, an increase of about 142,000 pounds over 1920.

The average butter quotation was 44.34c, the average price paid for butterfat in milk was 52 cents, and for butterfat in cream was 46.25 cents. Products sold were butter, sweet cream, condensed skim milk, condensed sweetened skim milk and casein.

FOLLOW BUTTER THROUGH

The members of the Riverdale Co-operative Creamery Association, together with those of six other producer-owned creameries, sell their product on the Los Angeles market through the Challenge Cream and Butter Association. This organization, owned and operated by the dairyman, is said to handle more than one-third of the butter distributed in Los Angeles, at only a small fraction of the charge usually made by commission merchants.

This business originated in 1910 as a co-partnership between the Riverdale Co-operative Creamery Association and the Dairymen's Co-operative Association of Tulare. At first there were only four employes and deliveries were made with a one-horse wagon. There are now 13 nicely painted and lettered delivery trucks and over eight minimum cars of butter are sold weekly. C. W. Hibbert is the Los Angeles manager.

According to the by-laws of the Riverdale Association as recently amended, all surplus which in the opinion of the directors is available for distribution, will be prorated annually to the dairymen who deliver to the creamery all of their milk or cream throughout the year.

PROVISION FOR NON-MEMBERS

Members will receive the full dividend in cash and non-members will receive credit for one-half the amount on the purchase price of a membership; the other half will be charged to the cost of handling the account.

Presuming that a dividend of 1 cent a pound butterfat were declared, a member milking 30 cows producing an average of 250 pounds fat per cow would receive a Christmas present of $75.

Persons who are not dairymen are not eligible to membership. The entire purpose and desire of the organization is to be a live and active force of and by the actual dairymen for their own benefit.

ALSO HANDLES FEEDS

It is felt by all members that under present unfavorable conditions the dairymen must co-operate more closely or fail.

It was decided recently to erect a grain warehouse on the creamery switch, and to install a feed grinder. The creamery has been buying concentrates for the dairymen and selling at cost, cutting out the middleman's profit. With the new facilities, which probably will not be ready until next fall, it is expected greatly to extend this service.

Denouncing Meat to Sell Medicine

NOT infrequently the attention of the California Department of Agriculture is called to glaring press advertisements telling us to eat less meat when we experience uncomfortable sensations in the region of the kidneys. Such warnings certainly must excite to laughter the strict vegetarian who may also be annoyed with symptoms which the advertisers of wonderful remedies, or wonderful advertisers of remedies, tell us are due to the harmful constituents of meat.

We have quite a complicated nervous mechanism approximating the numerous other tissues of the back and we know that all these nerve trunks and fibers coursing through these other tissues are intended by nature to convey certain sensations. Some of these sensations may be direct and others referred or indirect. That being the case, then are we going to attribute any pain we experience in the region of the kidneys as being due to the eating of meat only when we know there may be many other logical reasons for pains in that location?

THE DOLLAR AGE

In this age of "dollar chasing" we recognize two great groups of medicines: (1) Those having curative values for certain bodily ailments; and (3) those having a financial value only. In the latter group we find a number which are advertised in such a way as to enrich their producers, discourage meat production, induce the discontinuance of meat-eating by many who may sadly need it, and make the vegetarian with a pain in his back laugh until his sides ache!

And not only certain patent medicine manufacturers but also a growing army of food faddists, are engaged in active propaganda that is very harmful to the meat-producers of America.

COMMON SENSE ADVICE

On the other hand, many influential authorities emphasize the value of meat and urge greater consumption. Among

these is Dr. Woods Hutchinson, famous medical adviser and writer, who in a recent magazine article, gave some common-sense advice on foods and eating. "Eat plenty of meat" was the substance of his suggestions, but be sure it is good meat, and don't be a glutton.

Producers well may interest themselves in any campaign designed to increase meat consumption and to offset the effects of the vegetarian and quack remedy propaganda. It is generally agreed that meat consumption may be increased greatly by a little well-directed publicity.

Swine Sanitation Pays

THAT it is possible to raise pigs free from worms without resorting to medication is indicated by the results of recent experiments.

The system recommended is simple, practically the only requirements being a little extra care and labor. Just before the farrowing season it is necessary to clean the farrowing pens thoroughly with hot water and lye, and before the sows are put in all dirt is carefully washed from their skins. Within two weeks after farrowing the sows and litters which have not been allowed out of the pens, are moved to a clean pasture—one that has not held hogs since cultivation. The young pigs, in order to get a good start without worms, must be kept on clean pasture away from wormy hog yards without contact with other hogs, except the mothers, for at least four months, after which they are past the greatest danger from worms. To be sure, it is necessary to provide proper feed, water and shelter, but that is what any pig should have. Pigs kept free from worms not only make more rapid gains and produce better pork, but also seem more resistant to disease and mites.

Abnormal Taste in Milk

THERE are a number of plants which when eaten by the dairy cow, will transmit an unusual taste to her milk. Some of them are fed to her injudiciously by the dairymen, and others are eaten by the animal while grazing. Plants known to possess such properties are bect and turnip tops when fed in large quantities; excessive feeding of chopped roots; garlic, rape, lupines, orchids, kale, rutabagas, chicory, sorrel and pasturage on areas which have been inundated.

There are many other factors sometimes responsible for a peculiar taste in milk, such as improper sterilization of utensils, spoiled foods, brewers' grains, potato slops, fish meal, rape cake, flaxseed meal, poor straw, and, occasionally, medicinal agents administered to the animal.

Effective Fly Spray

A NUMBER of California dairymen are said to have paid $150 each for the formula of a fly-spray. This spray, according to the State Department of Agriculture, contained as its principal ingredient common kerosene oil to which was added sufficient oil of murbane to disguise the odor. Oil of tar and cresylic acid also can be used instead of oil of murbane, it is said. About a pint of the latter is added to each five gallons of coal oil. This simple combination is said to be an effective fly repellant.

BOYS AND GIRLS Their Work and Play

What Mistakes Has the Artist Made?

BOYS and girls, that city artist has been at work again trying to illustrate some country scenes. He is a good artist—one of the best who draws for ORCHARD and FARM, but he doesn't know very much about country life.

We want the girls and boys to study this picture and write the Editor, telling what mistakes the artist has made. How many things can you find in the picture that are not true to nature or that would make farm people laugh?

For the best letters received before March 20th, ORCHARD and FARM will give prizes. The awards will be based not only on the number of points mentioned, but also on the nature of the letters. Points considered by the judges will be neatness, interest and originality. Write only on one side of paper and be sure to give age and school grade, as well as correct address.

HERE ARE THE CASH PRIZES

For the letter adjudged best in every respect $2.00
For the "second-best" letter.. 1.00
For the letter placed third by the judges ..... .50

No letter may be more than 200 words in length. Now "get busy," and write your letter and mail it quickly to the Editor of ORCHARD and FARM, 1111 South Broadway, Los Angeles. What mistakes has the artist made? Watch for names and letters of winners in the April number.

Two Streams of Profit

Cash Income every day

Bank Account

Buying Power

CREAM TO SELL

No matter what your system of farming may be or where you live, you need a De Laval Separator and some cows.

Cows furnish the best market for your feeds, and they keep the fertility of the soil on your farm.

Then the De Laval separates the cream, which brings you in a steady cash income, and leaves the skimmilk in the best condition for feeding calves, pigs and chickens.

This is the surest, safest and most profitable system of farming—and the De Laval Separator has made it possible. It is the original separator, skims cleaner, lasts longer, turns easier than any other. There are over 2,500,000 De Laval Separators in use the world over—about as many as all the rest put together. The De Laval has always led in every important separator improvement and is recognized everywhere as the world's standard.

You may be wasting enough cream to pay for a De Laval by using a worn-out separator or by hand skimming.

SKIM MILK TO GROW ANOTHER CROP

Calves

Pigs

Chickens

EASY TERMS
Sold on such easy terms that it will pay for itself while you are using it. See your De Laval agent now or write us about getting a new one

De Laval Pacific Company
61 Beale Street San Francisco

Sooner or later you will use a
De Laval
Cream Separator and Milker

Stifel's Indigo Cloth
Standard for over 75 years
STIFEL REGISTERED

No work that you farmers do is too rough for clothes made out of Stifel's Indigo Cloth.

All Overalls, Jumpers and Work Clothes made of *this* cloth last longer, wash better and keep their "looks."

See that you get it. Look for this boot shaped trade mark stamped on the back of the cloth.

Garments sold by dealers everywhere—
We are makers of the cloth only.

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100% PROTECTION FOR LIFE
from *one* vaccination with Cutter's Liquid or Solid Blackleg Aggressin. Absolutely safe. Cutter's Solid Aggressin Injectors work just like Blackleg Pill Injectors. If Cutter's Aggressin is unobtainable locally, write
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N.B.—Old Style Powder and Pill Vaccines still made for those who prefer them.

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Have water on your own farm. In spare time make wells for your neighbors. It means $1000 extra in ordinary years, double that in dry years. No risk—no experience needed.
Outfits for Getting Water Anywhere
Earth augers, rock drills and combined machines. Engine or horse power. *Write for easy terms and free catalog.*
LISTER MFG. COMPANY
Box 727 Clarinda, Iowa

"You haven't read the magazine until you've read the ads."

ISABEL SINCLAIR'S PAGE

For the Woman in the Home

The foolish feare of what might happen—
I cast them all away
Among the clover-scented grass,
Among the new-mown hay,
Among the husking of the corn
Where drowsy poppies nod,
Where ill thoughts die and good are born—
Out in the fields with God.

Dear Friends:

If you have several children or a large family, you are familiar with the fact that the best of people, thrown together continually, do not always "get along." Now let me tell you a little secret that will do wonders for keeping peace in the family.

Instinctive and innate within every normal person is a determination to maintain the individuality—not personality but individuality. Frequently the thing that causes most of the inharmony, friction and irritability in a large family, especially one that is crowded as to living quarters, is the abolition of individuality.

They become just a family or a household, each using the other's things, without asking, and each infringing upon the other's rights. This can be remedied.

With the little children, avoid any partnership in clothes, toys or other belongings. Rather pay less money and buy two, so that each may have his very own, and never under any circumstances allow one child to take without permission anything that belongs to another.

It is very necessary to a child's happiness that he does have things belonging to him alone, and a miracle of good feeling is created by strict observance of that ownership. This plan recognizes individuality and promotes satisfaction. And rather than causing selfishness, it frequently has the opposite effect, for a child whose ownership of a toy is undisputed often has less aversion to sharing it.

Let this rule govern every activity of the family and you will be surprised at the harmonious adjustment of the home life.

Do not enter a room without first knocking. Do not ride "rough-shod" over anybody's rights and you'll have ten times as much as you had before and the love of the family "thrown in."

I've witnessed the results of this plan and it never fails.

Try treating your best friends and your family with the same courtesy and consideration of their rights that a stranger would force you to observe. Don't ever know anyone long enough or well enough not to have an absolute respect for personal property, abstract and concrete, and an unfaltering recognition of individual rights.

Sincerely,

Isabel Sinclair

Sweet Potatoes de Luxe

FIRST bake the sweet potatoes well. Discard the skins, and beat and cream the potatoes with butter and cream. Put in a baking pan. Cover the top with marshmallows, pushing them well down into the sweet potatoes. Put in the oven and bake slowly and thoroughly. Marshmallows must be well-browned on top. This is well worth the extra trouble it may seem to take.

The New Order

MARY'S mother was a great club worker and suffragette enthusiast. One day a caller came during her absence and little Mary went to the door. When the visitor inquired if her mother were there, Mary said: "Mercy, No! She won't be home today now until Saturday. Why, she hasn't even come home yesterday, yet."

Little Willie in a test in school, when asked to tell something about salt, wrote: "Salt is what makes potatoes taste bad if you don't put any on 'em."

What My Community Is Doing to Make Rural Life More Attractive

ALL work and no play makes Jack a dull boy. This is what we concluded when we formed the Farm Bureau Club.

We built an auditorium large enough for dancing, basket socials, chicken pie suppers, ice cream socials and entertainments at Christmas and holiday times.

FIRST PRIZE LETTER

An admission is charged for the dances, suppers and socials, and in this way the auditorium is paying for itself while we use it.

The Farm Bureau Club meets there and is devoted to an exchange of ideas and farm news. The members discuss the raising and feeding of livestock and other practical subjects, each of a series of meetings being devoted to some certain subject.

A director or president looks after the financial affairs, and an entertainment committee takes charge of the programs and sees to it that everyone has a good time.

The Ladies' Club also meets there and holds lectures and demonstrations in hat trimming, cooking, dressmaking, paperhanging, rug making and other subjects.

A bust form is made for each member who will pay for the material used. Thus the hardship of living in the country is eliminated, and instead we all have had a good time.

The social center has been a success in every way; it brings us in close touch with our friends and neighbors and gives us something pleasant and worthwhile to think about while we are working at home.

This is what my community is doing to make rural life more attractive.—Mrs. J. W. Dowell, Box 220, Laton, Cal.

Here Are the Winners in the Prize Letter Contest—More Cash Awards Offered

A LARGE number of interesting letters were received by the Contest Editor, and the first prize communication is published on this page. Following are those to whom the judges gave awards:

FIRST PRIZE $10
Mrs. J. W. Dowell, Laton, Cal.
SECOND PRIZE 5
Mrs. Emma J. Torbert, Stockton, Cal.
THIRD PRIZE 3
Mrs. J. Emerson, Auburn, Cal.

Read Details of New Contest—More Cash Prizes

Similar prizes are offered this month for letters upon the subject: The Most "Neighborly" Act I Have Ever Known.

Simply write as interesting a letter as possible, consisting of not more than 500 words, telling about some experience you have had or known, involving an act of real neighborliness.

We all appreciate and long to be regarded as good neighbors. What are the requirements to which we must measure up? What is "The Most Neighborly Act You Have Ever Known?"

Write your letter today. Address Isabel Sinclair, ORCHARD and FARM, Los Angeles. Three cash prizes: $10, $5 and $3. Letter must bear postmarked not later than March 20th. Prize letter or letters will be published.

Apple Whip

2 cups apple sauce
3 eggs (whites)
Cream for serving

Cook 6 or 8 medium-sized tart apples until soft in just enough water to keep them from burning. Add syrup to sweeten sufficiently and one-eighth teaspoon grated nutmeg. Cool. Press the apple sauce through a strainer and add to it the stiffly beaten whites of eggs. Beat until light and foamy. Place in saucers and serve with fresh cream or a custard sauce made of the egg yolks. This sauce may be prepared by the same method as for soft custard, omitting the whites of eggs. Canned fruit, such as peaches, figs, cherries, or guava may be substituted in the same proportion for the apples.

Good music in the home will contribute much toward a contented and happy farm life.

Favorite Boston Cookies

½ cup butter or other fat
¾ cup sugar
1 egg
1½ cups flour
1 teaspoon baking powder
½ teaspoon salt
½ teaspoon cinnamon
½ cup chopped raisins
¼ cup chopped walnut meats

Cream butter and add sugar slowly, creaming them together. Add well beaten egg. Sift 1 cup flour, baking powder, salt and cinnamon together and add to egg mixture. Mix remainder of flour with the raisins and nuts and add. Mix thoroughly and drop from teaspoon one inch apart on a flat greased pan. Bake in hot oven 10 or 15 minutes. This makes about 36 cookies.

Canning Club Work

THROUGH membership in a canning club and raising one-tenth of an acre of tomatoes, an ambitious little girl, Rosalie Dyer, has been able to earn all her spending money and start a snug bank account. Rosalie is seen at work with her canning equipment.

Wishing to enlarge her garden plot, she planted another tenth-acre to beans. Her tomatoes were the first on the market and sold for $6 a crate; the beans, maturing later, brought a good price also. She canned a great many of the tomatoes as well as beans and found a ready market for all her products.

Her prosperity she owes to the canning club, for it was through the club that she conceived the idea of enlarging her garden plats and finding a market for the products.

"Book of Information"—"Enclosed find check for $1, for which please send me your valued book of ready information. It is the cheapest farm accessory I have, and yet serves me better than most any other."—W. H. Moore, Dorris, Cal.

Best Farm Paper—"Enclosed please find my check for another year's subscription to ORCHARD and FARM, which is the best farm paper I ever read."—G. J. Leffler, Stockton, Cal.

Prize Lemon Pie

Three eggs, one cup sugar, one lemon and a lump of butter.

Separate the eggs. Beat the yolks well. Add the juice of one lemon, half of the cup of sugar and a lump of butter about the size of a walnut. Heat this mixture in a double boiler.

Beat the whites well, adding the other half cup of sugar. When the mixture in the double boiler is quite thick, add half of the whites and remove immediately from the stove.

If allowed to remain on the stove after adding the whites, it will fail, as the whites will be cooked too much.

Put in pie crust. Add the other half of the whites for meringue and set in oven to brown.

[Note—This famous recipe won a prize of $1000. Many have pronounced this the most delicious lemon pie ever devised.]

Little Helps

THREE cheers for the woman who can seem just as sweet when she comes out of the kitchen in July as she feels when she goes into the church on a bright Easter morning.

If the pantry becomes infested with ants, dip a sponge in sweetened water and place it where the ants gather. They will soon appear on the sponge "trap," which can then be plunged into hot water.

Kerosene will clean the kitchen sink twice as quickly as any scouring powder. Moreover, kerosene, mild soap, and hot water will never injure the porcelain.

Kerosene also will remove rust and grease from iron.

A window over the sink, lightens the heart of the housekeeper as well as her work.

When you were a girl how much more reasonable were you than that foolish girl of yours? Yet what a very fine woman you've turned out to be. So will she. Give her time.

When you get ink on your hands, you do not need to let it wear off. Here is a very simple and ever convenient way of removing it immediately. Wet the ink-stained fingers and rub the spot with a common sulphur match, (the kind with the big heads that come in the large boxes is more effectual). If the first match doesn't take it all off, use several. The stain will disappear.

A chocolate stain will come out entirely if washed in cold water instead of hot, preferably while the stain is fresh.

Breaded Pork Sausage

DIP links of sausage into egg mixture, then in fine bread crumbs and fry in deep fat. This makes a delicious dish and adds variety to the usual method of serving sausage.

ANOTHER PLEASED PATTERN BUYER

"I am very much pleased with the ORCHARD and FARM patterns. The one I ordered recently fitted me so perfectly, I liked it especially well.—(Miss) Mary Herbert, Anderson, Cal.

Note—Compare these patterns, as to price and style, with those obtainable elsewhere!

PRETTY COSTUMES
Chosen by Isabel Sinclair

These costumes are simple and can be made readily by the home dressmaker from the instructions provided. Send 15 cents in silver or stamps for each pattern desired. Address Pattern Department, Orchard and Farm, 1111 South Broadway, Los Angeles. Give full name and address.

3892-3571—Lady's Costume

Slip 3571 cut in 4 sizes: Small, 34-36; medium, 38-40, large, 42-44; extra large, 46-48 inches bust measure. It requires 3 yards of 36-inch material for a medium size. Blouse 3892 cut in 7 sizes: 34, 36, 38, 40, 42, 44 and 46 inches bust measure, and requires 3¾ yards of 40-inch material.

Two separate patterns; 15 cents for each pattern.

3894—Girl's Dress

Cut in 4 sizes: 10, 12, 14 and 16 years. A 12-year size requires 4⅛ yards of 42-inch material. Price 15 cents.

3870-Lady's Dress

Cut in 6 sizes: 34, 36, 38, 40, 42 and 44 inches bust measure. A 38-inch size requires 4 yards of 44-inch material. The width of the skirt at the foot is about 2 yards. Price 15 cents.

3897—Lady's House Gown

Cut in 4 sizes: Small, 34-36; medium, 38-40; large, 42-44; extra large, 46-48 inches bust measure. A medium size requires 5⅝ yards of 36-inch material. Price 15 cents.

3723—Girl's Dress

Cut in 4 sizes: 4, 6, 8 and 10 years. An 8-year size requires 8¾ yards of 27-inch material. Price 15 cents.

3887—Girl's Dress

Cut in 4 sizes: 8, 10, 12 and 14 years. A 12-year size requires 4¼ yards of 32-inch material. Price 15 cents.

3130—Girl's Apron

Cut in 4 sizes: 6, 8, 10 and 12 years. For an 8-year size, 1¾ yards of 27-inch material is required. Price 15 cents.

3877—Lady's Apron Dress

Cut in 4 sizes: Small, 34-36, medium 38-40, large, 41-44, extra large, 46-48 inches bust measure. A medium size requires 6⅛ yards of 36-inch material. Price 15 cents.

3885—Child's Romper Suit

Cut in 4 sizes: 2, 4, 6 and 8 years. A 4-year size requires 2⅞ yards of 32-inch material. Price 15 cents.

CATALOG NOTICE

Send 15 cents in silver or stamps for our up-to-date spring and summer, 1922, catalog, containing over 500 designs of ladies', misses' and children's patterns, a concise and comprehensive article on dressmaking; also "Some Points for the Needle," illustrating 30 of the various simple stitches. All valuable hints to the home dressmaker.

Use Coupon in Ordering Patterns

Herewith find.....cents, for which send me the following patterns:

Pattern No. .....Size.....

Pattern No. .....Size.....

Pattern No. .....Size.....

Be sure to give number and size. Send orders for patterns to ORCHARD AND FARM, 1111 South Broadway, Los Angeles. Be sure to sign your name and address below.

Name .....

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Address .....

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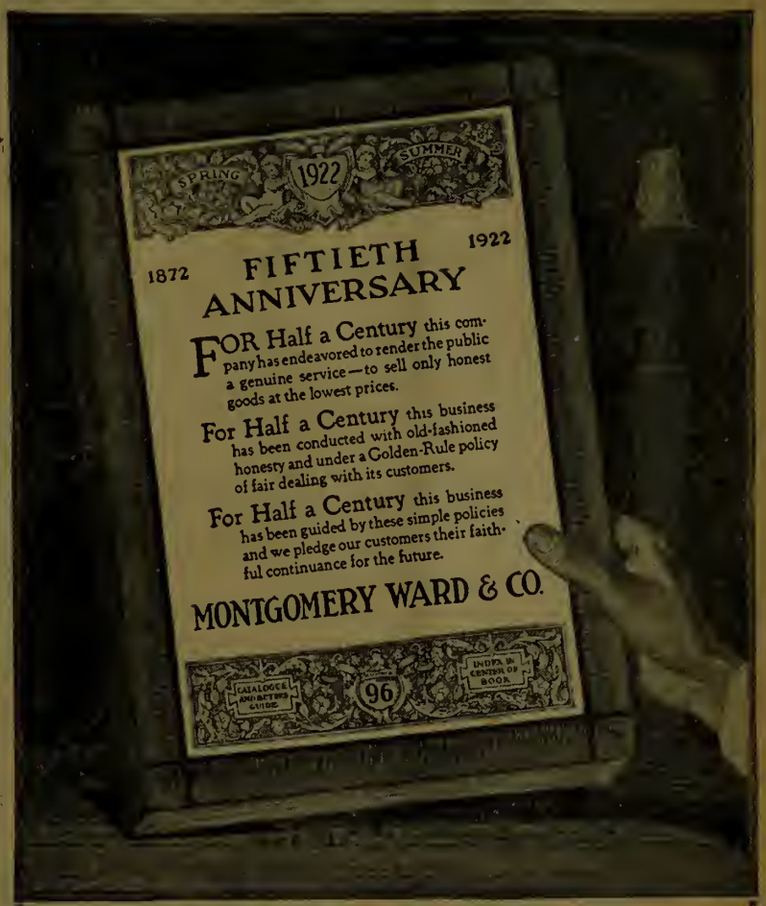

Write for Your Free Copy of this 50th Anniversary Catalogue

Twenty-five Million Dollars' worth of new merchandise is being manufactured for this catalogue.

New, fresh merchandise, bought wherever ready cash will buy goods of Ward quality, at the lowest prices in years. And this big complete catalogue, this 1922 Guide to the Lowest Prices on all lines of merchandise, is yours FREE—simply for the asking.

LOWER PRICES Our Duty to You

Our important work today is making prices come down for You, our customers. We have no big stocks of merchandise bought at high prices to sell you at high prices.

Every price in this catalogue is based upon today's low cost of new, fresh merchandise—and offered at the lowest prices at which good goods can today be manufactured and sold.

Our catalogue, therefore, becomes your 1922 guide to the correct low prices. It tells you how little you need to pay for almost everything you buy.

Everything for the Home, the Farm and the Family

Everything that goes into the home to make it more modern, comfortable and complete, from wall paper to curtains, lighting fixtures to rugs—everything at Money-Saving Prices.

For Men and the Farm: Everything a man needs from clothing to tools—everything for the farm and farmer's uss. Everything at guarantssd lowest prices.

We Want You to Have this Book

Our customers will be sent their catalogues as usual. We want you, the readers of this magazine, who do not buy at Ward's, also to have a copy.

We want you to know this great new-old institution of Montgomery Ward & Co., the advantages it offers you, and the money it can save you.

We want you to learn for yourself the spirit of Ward's—alert, progressive, and marching with the leaders among all the low-price making business houses of America.

One copy of this our Golden Jubilee Catalogue, is Yours FREE. It will go to you simply for the asking. Fill in the coupon below.

66-H

Mail this Coupon to Portland Ore.

To MONTGOMERY WARD & CO. Portland, Ors.

(Mail this coupon to Portland, Ore.)

Please mail my copy of Ward's 50th Anniversary Catalogue.

Name .....

Address .....

Montgomery Ward & Co.

Portland, Ore.

Chicago Kansas City Fort Worth St. Paul

FORTY-THREE years ago Alexander Graham Bell, the inventor of the telephone, wrote this inspired forecast: "It is conceivable that cables of telephone wires could be laid underground or suspended overhead, communicating by branch wires with private dwellings, country houses, shops, manufactories, etc., and a man in one part of the country may communicate by word of mouth with another in a distant place."
At the right, an old print of Bell lecturing on telephony, 1877.

Foresight

More than forty years ago, when the telephone was still in its experimental stage, with but a few wires strung around Boston, the men back of the undertaking foresaw a universal system of communication that would have its influence upon all phases of our social and commercial life.

They had a plan of organization capable of expansion to meet the growth they foresaw; and their wisdom is borne out by the fact that that plan which they established when telephones were numbered by dozens is efficient now when telephones are numbered by millions.

This foresight has advanced the scientific development of the art of telephony to meet the multiplied public requirements. It has provided for funds essential to the construction of plant; for the purchase of the best materials on the most advantageous terms; for the training of employees to insure skilled operators; for the extension of service in anticipation of growth, with the purpose that no need which can be foreseen and met will find the Bell System unprepared.

The foresight of the early pioneers has been developed into a science during the years which have elapsed, so that the planning of future operations has become a function of the Bell System. This is why the people of the United States have the most efficient and most economical telephone service in the world.

"BELL SYSTEM"
AMERICAN TELEPHONE AND TELEGRAPH COMPANY
AND ASSOCIATED COMPANIES
One Policy, One System, Universal Service, and all directed toward Better Service

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Our experts will be pleased to furnish estimates and suggestions as to the installation of irrigation systems for any character of land.

We are prepared to furnish you names of manufacturers of concrete pipe in your vicinity, equipped to manufacture pipe of the proper quality at a fair price.

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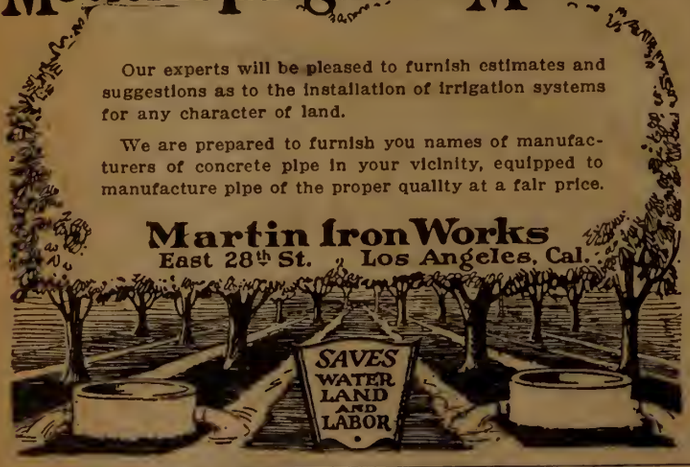

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OREGON NURSERY COMPANY, Orenco, Ore.
Opportunities for More Salesmen

YOUR GARDEN of FLOWERS

by Helen Temple

Out-Door Violet Growing

IN CALIFORNIA, violets seldom are grown in-doors. On the other hand, owing to the summer fogs, and generally cool climatic condition, the coast regions are almost ideal for out-door violet culture.

In the interior, however, more care must be exercised. Here the violet bed must be protected from hot winds and sun, a mulch must be provided, and a much larger quantity of water is required, as well as a more strenuous fight against disease.

The violet is a plant that demands cool climatic conditions and a cool soil, enriched with a "cool" fertilizer. (A cool fertilizer may be provided in the form of well rotted cow manure.)

BEST SOIL FOR VIOLETS

A moderately heavy loam that does not bake, enriched with well-rotted cow manure is considered one of the best soils for out-door violet culture. Often it is advisable to spade a little lime into soil which has a tendency to become sour. The bed should be prepared two or three weeks before planting, when the manure and lime are added.

Sometimes a small quantity of ground bone is added to the soil when natural fertilizer is not available. However, too much nitrogenous fertilizer will make the violets run to leaves and stems; in fact, the foliage becomes quite rank in growth and flowers are seldom produced. The violet bed, well prepared and carefully planted as to situation and selection of variety, will last for several years.

When a new bed is to be planted, select a new situation if possible. However, if this is not possible, dig up the old bed, discarding the old soil to a depth of a foot or more and filling the bed with new soil.

SELECTION OF VARIETIES

Most of our well-known varieties do well near the coast. The Marie Louise, however, is not grown successfully in the coastal regions. It does best in the Interior, where protection against the heat is afforded.

When planting violets inland, use lighter soil. The Marie Louise does best in a sandy loam, this being especially true when it is planted in the interior, as the sandy soil, when protected from the sun to a certain extent, is much cooler than a heavier soil. Any varieties that you plant in the interior should be chosen carefully. The Giant does not do well in the interior, requiring a cool, moist temperature at all times for successful blooming.

The Marie Louise is double, violet blue and very fragrant. Its stems are not so long or straight as the Giant or Princess of Wales, however. The Princess of Wales is a dark blue, well suited to the coastal regions. The Swanley White is pure white, double, very fragrant, also best suited to a lighter soil; it does well in the interior.

When choosing a violet for its value in bunching, either the Giant or Princess of Wales, is very good. These violets are considered "good keepers." The Viola Odorata is a sweet-scented violet. The California yellow violet is a native of our State. It should be included in our garden of flowers.

Propagation and Cultivation of Violets

VIOLETS are propagated in three ways: The most popular method is by the use of cuttings from healthy runners. In mid-winter, the violet sends out long shoots. These take root and start a small plant; then in early spring, they are cut from the main plant, dug up and set out to become producers of flowers.

Select only the runners that grow from vigorous parent plants. Set young plants in boxes filled with one part clean sand, one part loam and one part well-rotted cow manure. In late spring, transfer to their permanent bed.

Another means of propagation, is the division of the root system from healthy plants. Set these in the propagation boxes, using the same soil mixture as advised for cuttings, or young violet plants.

Violets may be propagated by cuttings made from the crown of the plant, or the un-rooted sections of the root. Set these out in propagation boxes filled with clean sand, never allowing the sand to become dry. This method is not the best, however. It destroys the parent plant and also produces plants that deteriorate much more rapidly than those produced from the runners. The Viola Odorata, which is the mother of all violets, produces seed as means of reproduction.

SETTING OUT PLANTS

The soil must be prepared thoroughly before planting time. The best time to set out young plants is in May. Set them about a foot apart, and give a thorough watering. This first year, give them quantities of water until the rains begin. As soon as violets begin blooming, pick them, or they will soon stop blooming. In the home garden they should be picked thoroughly once a week. The florists, however, must pick them much oftener. After setting out young plants, replace as soon as possible those that die. New plants should be planted every four years. By this time, the old ones will begin failing.

WHEN TO WITHHOLD WATER

In California, violets will bloom almost the year around if given proper care. All of the month of July and half of August, water should be withheld. The violet bed then should be "cleaned up." Burn all litter.

In the interior, and semi-tropical regions after the violet bed has had its "yearly" going over, mulch with a clean layer of straw and well-rotted manure. In the middle of August, give the bed a thorough soaking. After this, keep it well watered until the next rest-period. During the winter, however, when there are frequent rains, it is not necessary to irrigate so often.

VIOLET "SUCKERS"

Farmers "sucker" their corn. So must we "sucker" the violet or the parent plant will fail. Soon, the violet bed will become a string of woody crowns. Cut the suckers, or runners off close to the parent plant. If new stock is desired, let the suckers grow, then use them for new material. After they are cut from the parent plant, the latter will soon recuperate. When the violet bed is "thin," the suckers often are cut from the parent plant and allowed to grow. Quite often after the blooming season is over, and the rest period at hand, the violets are "suckered" and the little plants set out in "homes" of their own.

They should be kept in propagating boxes, which can be protected from heat and wind most easily. In October they should be ready for their permanent home. Treat in the same manner as the cuttings taken in spring. One advantage in starting plants at this time, is that of time saving. The violet bed must be cleaned during the rest period, so one may save time in removing the runners at the same time for propagation.

Violet Diseases and How to Combat Them

IF THE violet bed is kept well watered and clean, disease of any kind has a much less chance of "getting hold." However, at times, peculiar weather conditions and other factors will cause a violet bed to fail. The

most common diseases of the violet are wilt, or stem-rot, and "spot disease." The red spider is the principal insect pest.

Wilt or stem-rot usually is caused by the continued use of the same soil bed, infection from the cutting bed where unclean sand had been used, or from plants that have been propagated from crowns of an old plant infested with this disease.

It causes the plants to shrivel and die during the summer. The only effective method of combatting it, is removal of all infected plants and a thorough "clean-up" of the bed. If the entire bed is infected, dig it up and burn all plants. Do not use for propagation suckers from infected stock. Begin the new bed with new soil and new stock.

Spot disease spreads rapidly if not combatted immediately. This causes tiny yellow spots, surrounded by transparent rings. These grow until they grow into each other. Later they turn black. After turning black, the disease spores ripen and will be spread to other plants by the wind. To combat this disease, carefully remove all infected leaves and burn. Be very careful to prevent water from standing on the leaves and foliage. If water is used to wash the leaves, use it on a windy day when they will dry quickly. I have used a heavy spray at this time. This washes all ripened spores to the ground. A layer of clean river sand under the plants will help to prevent diseases from spreading.

Other diseases, such as scald, wart disease and root-galls are treated in a like manner, strict attention being paid to cleanliness. Old beds and plants are most susceptible to disease.

Red spider dwarfs the plants, turns them yellow and ends by killing them if not controlled. A strong spraying, when plants are in full leaf often will rid them of red spider. During the rest period, remove all foliage infested with red spider and burn it.

Our Gardens In March

IN THE semi-tropical parts of California, sweet peas, asters, celosia, centaurea, dianthus, marigolds, balsam, zinnias, shasta daisies, verbenas and calliopsis are scheduled to be sown and transplanted in March. The coast region planters still must furnish protection against the cold winds. In this section the above list may be followed if all plant beds are protected from winds until they are well-established.

In the interior, do not set out young plants unless frosts are over. Sweet peas, poppies, coreopsis, candy-tuft and alyssum may be sown or transplanted outdoors in most sections of the interior.

The bulbs for March are tube-roses, gladiolus, dahlias, cannas and calias. These should be planted as early as possible, especially in sections where the summer is early. Along the coast, bulb planting is not necessarily a "rushing matter."

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THE Coleus is one of our prettiest, bright-foliaged house plants, and one of the most easily grown. There are numerous varieties with all shades and shapes of leaves. They may be started from seed or cuttings. They thrive best in a warm, moist atmosphere and are susceptible to frost. In starting the seed, follow the directions given for Calceolarias.

Cuttings will root readily in water or wet sand, if taken during the warm months, or if kept in the winter in a temperature of 50 degrees. They show their brilliant colorings best when grown in a sunny situation. The soil best suited for Coleus is a mixture of [illegible] and coarse sand, or a mixture of [illegible] and cow manure, soddy loam [illegible]

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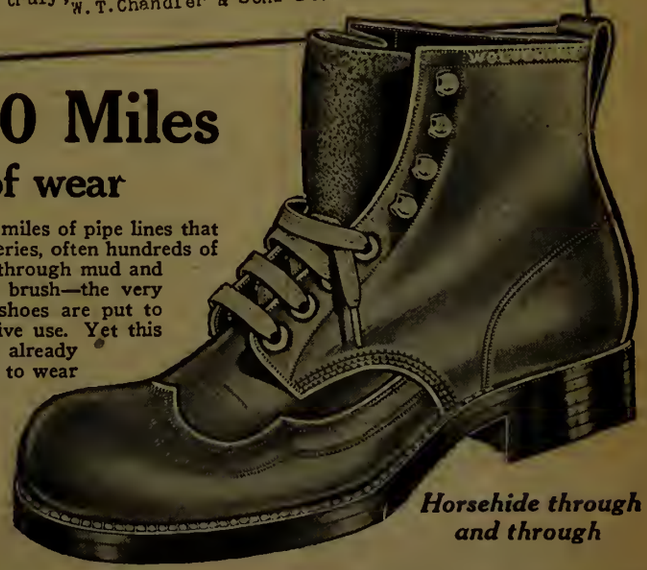

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$2500 CASH buys 80½ acres improved land in Apple Valley, Mojave River Irrigation District, 8 miles east of Victorville. Worth $5000. Would be cheap at $10,000, when water comes in. Four-room house, barn, chicken houses, well, pumping plant and some household furniture. Water unusually good. Decomposed granite soil. Highly productive apple, peach and pear orchards near by. Ideal climate for weak lungs and sensitive throats. Will cure asthma. Price less than cost of improvements. Land a gift at this figure. Owner in poor health and needs the money. Act quickly. It's a sacrifice that's not offered every day. M. A. Graffiin, 909 East Edgeward Road, Los Angeles.

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CALDWELLS white Muscovy (Quackless) Ducks, win, weigh, lay and pay. Largest duck of the duck family. Eggs, ducklings, breeders. Free circular. Caldwell Duck Ranch, Box 274, Los Angeles, Cal.

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75,000 cuttings, rooted and not rooted, of a wonderful resistant grape vine, which will bear without being grafted,

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the only satisfactory absolutely resistant direct bearer grape vine now obtainable in America.

It is a Hybrid, 2-3 Rupestris, 1-3 Teinturier—a prolific bearer, tried many years under all soils and climatic conditions.

It readily takes root from cuttings and produces a juice of a color intensity far superior to the Alicante Bouchet.

No order taken for less than 1000 cuttings.

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Best by Test—Results Always. Ask the Growers who use it.

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BIG GUN TANKAGE: 10% Nitrogen, 4% Phosphoric.
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I want every sufferer from any form of muscular and sub-acute (swelling at the joints) rheumatism to try the great value of my improved "Home Treatment" for its remarkable healing power. Don't send a cent; simply mail your name and address and I will send it free to try. After you have used it, and it has proven itself to be that long looked for means of getting rid of such forms of rheumatism, you may send me the price of it, One Dollar, but understand I do not want your money unless you are perfectly satisfied to send it. Isn't that fair? Why suffer any longer, when relief is thus offered you free? Don't delay. Write today.

Mark H. Jackson, 41H Durston Bldg., Syracuse, N.Y.
Mr. Jackson is responsible. Above statement true.

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Bee-keepers can obtain from the Apiary Department of the Diamond Match Co. the finest quality of Bee-keepers' supplies at fair prices.

The Apiary Department, which is in charge of experienced Bee-keepers, is one of the largest of its kind in the United States and maintains a constant excellence of product and unsurpassed service.

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APIARY DEPARTMENT
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Partnership With the Bee

By W. B. Dickenson

WRITTEN ESPECIALLY FOR ORCHARD AND FARM

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Article IV—Honey Production

THE great object of beekeeping being to secure surplus honey, all management of bees should look toward securing the greatest amount of honey in the best shape for use and for market.

The very essence of success in honey production is to have the colonies strong in numbers at the commencement of the main honey flow. This makes it imperative that each colony have a good young queen that is a prolific breeder, and that no colony swarms at this time.

Fortunately, as a rule, in California bees are unlikely to swarm during the main flow, spring being the natural swarming period. However, strong colonies may swarm even late in the summer.

A Shallow Super

The time of the main honey flow in most parts of the State is during July, August, and September, but of course, this varies in different localities. A very good method to discourage swarming is to place a shallow super with one inch foundation starters in the frames under the brood chamber proper, exchanging from time to time any which the bees may fill with comb, using these for extracted or chunk honey supers.

Bees appear to be reluctant to swarm and leave their work unfinished. Shallow frames in this position make very slow progress when there is room above, and the vacancy near the entrance is a great deterrent to swarming.

COMB HONEY PRODUCTION

Use hives of the eight-frame size, and use two bodies as a brood chamber, until the commencement of the main flow. During the spring flow, and as soon as the hive body proper is filled or almost filled with brood and honey, place another body of the same size above, taking one frame of brood from the center, and placing it in the center of body number two, replacing it with a frame from number two.

The queen in a few days will commence laying in the addition. It should not be overlooked that in most districts, between the spring flow and the main flow, there are a few weeks in which there is very little honey in the fields, not nearly sufficient to insure the vast population necessary to take full advantage of the main flow at its commencement.

Now, therefore, judicious feeding, systematically followed, is necessary, or a great set-back will be experienced, destroying the prospect of a good crop. The colonies should be examined, and those whose supply of honey is low and diminishing, must be fed.

METHODS OF FEEDING

The best method of feeding is by giving frames of capped honey, saved especially for this purpose, from the previous season; but if this is not available, feed a syrup composed of one part white granulated sugar, and one part water, by measure. A good manner of feeding this syrup is by means of a Doolittle Feeder.

This feeder is the size and shape of a brood frame, and takes the place of one when placed in position in the hive. Remove a frame from one side of the upper body, place feeder in the space thus formed, and feed one-half pint of syrup as required. Do not feed large quantities at one time; remember that some honey is always coming in. Just enough should be fed to encourage brood-rearing, thereby insuring the presence of a full force of bees at the right time.

As soon as the main honey flow commences, the colony (which now consists of two stories) should be reduced to one. Examine each comb carefully, retaining only those frames which contain the most capped brood, distributing the combs taken from the colony among other colonies which need them.

From the combs that are removed the bees should be brushed off on to the top of the frames retained in the hive, or shaken in front of it. Brushing is perhaps preferable as there is less chance of losing the queen.

The colony now is ready for the first super of sections. The super of sections must be placed over the hive so that no leakage of air is permitted, or the sections near this draft will be avoided by the bees. Comb building demands high temperature, therefore a warm super is a primary point or the bees will enter only reluctantly.

Comb Honey Super

COLD CAUSES WASTE

Also much honey is wasted as food by the wax workers in generating the heat which constantly is being lost, owing to badly-fitting supers. See that one inch at least of thin super comb foundation is firmly attached to the center of each section. The larger the amount used the better, but do not quite fill the sections or the lower corners will most likely be torn out by the bees.

A three-inch piece suspended from the top of each section, and a quarter-inch piece fixed to the bottom are very satisfactory. This method is known as a "top-and-bottom starter." As there is ample room for the bees to pass between these two starters, the corners will be unlikely to be eaten out.

When this super is one-third filled, and capped, place another below it, or if the colony is very strong and

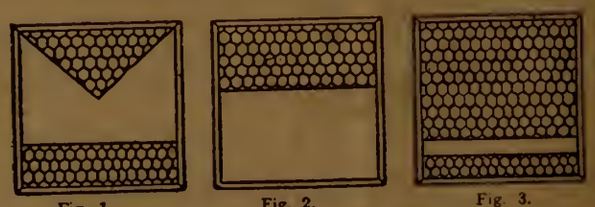

Fig. 1. Fig. 2. Fig. 3.

Various Methods of Fixing Foundation in Sections

honey is coming in well, it is often necessary to add two supers at this time. As soon as the first super is completed, or nearly completed remove it and refill with sections. There may be a few sections at the sides which are not quite finished; place these in the center of the refilled super and return, placing it next to the hive body, in which position they will be capped very soon.

Leave completed sections of honey as short a time as possible on the hive; if left very long, they are apt to become stained by what is misnamed "travel stain." This is not actually a stain caused by bees traveling across the face of the comb, as would be inferred from the name, but in reality is an extremely thin layer of propolis laid on by the bees as a further protection to the honey. As the season nears its close, reduce to one super only, or you will be left with a lot of unfinished sections.

It happens sometimes that a colony, however strong in numbers, appears disinclined to work in the sections, the workers clustering together and gathering only sufficient honey to keep the storage cells in the brood chamber replenished.

In this case, pour a few spoonfuls of honey on the top of the sections, or take from another colony a super of sections in which real work is going on, and after removing all the bees, place it on this colony. Once any colony has commenced real work, it will be continued as long as there is any nectar in the fields, but if the colony steadfastly refuses to accept a section super, the only alternative is to give them frames in place of sections changing them into either chunk or extracted honey gatherers when work probably will be commenced at once.

[In succeeding articles, Mr. Dickenson will take up the topics of "Chunk Honey" and "Extracted Honey."—Editor.]

Hail the Carrier Pigeon

PROBABLY the most unique method of commercializing one of the best known members of the feathered tribe, the homing pigeon, is being instigated by the Sperry Flour Co. at its Oakland division, where a series of flights have proved to be successful in both publicity and service.

The homing pigeon during the world war gained world-wide recognition for services rendered mankind in the establishing of a well earned victory, and the wonderful feats of daring performed by this little feathered hero forever will be recorded in the niches of the Hall of Fame.

Upon realizing the value of the homing pigeon as an aid to an already well conducted system of service, the Sperry Co. established a loft at the Oakland division with the idea of commercializing the most intelligent member of the feathered tribe as an asset in the distribution of its products.

In the spring of 1919 several pairs of these aerial messengers were settled in a loft adjoining the mill, and, after careful training and conditioning, the birds were sent to a town some fifty miles distant for their first official test as message carriers.

The personnel of this initial flight carried messages to the Mayor and other officials, and on being liberated each similar letters made record time in returning to their home loft.

At that time many towns have been visited by the Sperry Homers and routes have been established for distance covered. "Prince Germea," shown in the illustration, holds an enviable record of 15,400 miles of air flights and has carried a total of 146 messages, besides delivering orders for products amounting to many thousands of dollars. One of his most striking performances was the delivery of an order from a town twenty-two miles away. The flight home was made in twenty-seven minutes, the goods being en route to the customer forty minutes after the order was placed.

"Queen Sperry," with a total of 11,000 miles; "Lady Encore," with 10,600 miles; "King Sureiay," with 9800 miles, and "Drifted Snow," with 7600 miles, comprise the leaders in commercial, while numerous others of the flock are doing their bit in establishing service throughout the division.

At the present time plans are being made to establish a homing pigeon loft at the experimental farm at Escalon, near Stockton. A similar loft will be erected at the Stockton mills and in this way daily communication can be established between the farm and the Stockton office. The field men and salesmen will be able to communicate with headquarters, sending in reports and orders via "pigeon-gram."

It is believed that the farmers throughout the State will become interested in the homing pigeon, as the cost of establishing a flying loft is very nominal when one realizes the possibilities both for communication and for long distance racing.—E. M. Van Antwerp.

"Hercules Helps 'em Put On Weight"

"Just heft the fruit from the dynamite planted trees and then the fruit of the spade dug plantings or from the orchard where you haven't blasted between the rows.

"Hercules Farm Dynamite helps 'em put on weight. They are larger and juicier when you use Hercules.

"Send for the 68-page book, 'Progressive Cultivation' that the Hercules Powder Co. has published for you. Nothing about dynamite on the farm or ranch has been left out. Ditching, stumping, tree planting, blasting in orchards—it is all there, and the book is free upon request."

Send for this book—It is free.

HERCULES POWDER CO.
1004 Chronicle Bldg.
San Francisco California

HERCULES FARM DYNAMITE

SEND FOR CATALOG TO-DAY

Planet Jr.

Accurate seeding pays

Seed costs money. Labor costs money. Save both by planting with Planet Jr. seeders. Planet Jrs. sow regularly, rapidly and accurately in hills or drills at proper depths in even, narrow lines. A Planet Jr. leaves no gaps—wastes no seed. Every Planet Jr. has an adjustable index with the names of the principal seeds, enabling the user quickly to change the feed to sow the different varieties.

Planet Jr. sows so evenly and straight, it makes close cultivation of standing crops quicker and safer.

All Planet Jr. Farm and Garden Implements are scientifically constructed on proved, practical lines. Send for the complete Planet Jr. catalog, showing seeders, wheel hoes, horse hoes, riding cultivators, etc.

S. L. ALLEN & CO., Inc.
Dept. 76
5th & Glenwood Avenue, Philadelphia
Agencies in all principal Pacific Coast Cities.

No. 4 Planet Jr. Combined Hill and Drill Seeder, Single Wheel Hoe and Plow. An economical, easy-working and serviceable implement for large gardens. Does most of the garden work from planting to cultivating right through the season. Built to last a lifetime.

Planet Jr. Distributors

B. Hayman Co., Inc.
—Since 1876—
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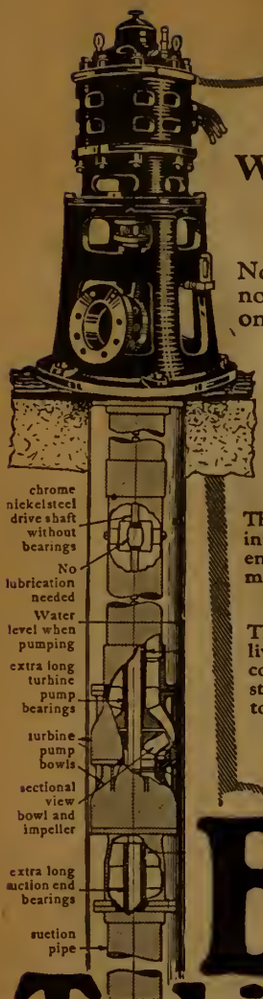

A Pump without lubrication troubles

No lubrication troubles because there are no under-surface bearings to lubricate. The only lubrication required in the New Bean Turbine is in the head, where a radial thrust bearing operates in an oil bath. We have eliminated all drive shaft bearings through improved construction. The advantages of this construction are at once apparent.

Built in All Sizes from 6-inch up

The Bean Turbine goes into a bored well—or into your old pit, if you have one. It is suspended entirely from the surface—and can be easily removed when desired.

Efficient—Economical

This pump develops surprising efficiency and delivers the maximum of water at the minimum of cost. Requires little attention and the heavy substantial construction insures long and satisfactory service.

Send the coupon for Turbine Pump Bulletin—also, ask for catalog of Horizontal Pumps, if interested.

Bean Spray Pump Co.
101 W. Julian St., San Jose, Calif.

Bean Turbine Pumps

Bean Spray Pump Co., 101 West Julian St., San Jose, Calif.
Gentlemen: Please send me your pump catalogs as follows:

_____New Turbine Pumps _____Horizontal Pumps

*Name*_____*Street or R.F.D.*_____

*Town*_____*State*_____ 50-P2

Western Surface Irrigation Pipe

Made in one piece of heavily galvanized steel with riveted seam, insuring durability.

Also manufacturers riveted steel pipe well casing; corrugated galvanized culverts and tanks.

WESTERN PIPE & STEEL CO.

OF CALIFORNIA

444 Market Street, San Francisco. | Fresno, Taft, Bakersfield, Phoenix, Arizona. | 178 North Spring Street, Los Angeles.

KILL SQUIRRELS

and Other Rodents—Use
CARBON BISULPHIDE

Used by U. S. Public Health Service and by Horticultural Commissioners

WHEELER, REYNOLDS & STAUFFER

624 California St., San Francisco, Cal.

Telephone Kearny 871. Stege, Calif.

Sunflowers

The "Green" Hand

(He tells that his experience should stand him in good stead)

The Boss—"Do you think you can pitch hay?"

His Nibs—"Well, I'll try. I used to be pitcher on the school baseball team, and yesterday I pitched horseshoes!"

Wouldn't This Tire You?

"Sure, Casey dropped his shirt down the well. But next day he pumped it up again with the water."

"Oh, I see. A case of pumping up attire!"

WHERE IGNORANCE IS BLISS—

The more I learn concerning food,
The less I can enjoy it.
Although my appetite is good,
I dare not now employ it.

For vitamine and calory
And protein—there's the rub!
I now must spend my salary,
When all I want is GRUB!

—Justin Nutt.

Disillusionment

"A good way to get rid of a lot of illusions is to go back to the old home town," said Jones, sadly. "The first three men I met didn't recognize me, and the next three didn't know I'd been away!"

Carbon Bisulphide—Standard Tested Ground Squirrel Destroyer

AMONG the many materials and remedies used for the destruction of ground squirrels, carbon bisulphide stands out as one of the most reliable and efficient agents.

Its use, dating back over a period of 45 years, has steadily increased until today carbon bisulphide is acknowledged one of the standard remedies.

For many years there has been a general belief that carbon bisulphide could be used only during the rainy season. But in many localities this is not true, as the efficiency of the gas in the squirrel burrows depends upon the amount of moisture contained IN the soil. In districts where the land is under irrigation, the chemical can be used with the same efficiency as during the winter and spring months in other districts. When the ground is dry, however, the gases escape through the cracks formed by summer heat.

By far the best method of applying carbon bisulphide is the "waste ball" method. There are others in use, including the pump and funnel methods, but they are more expensive. On an average, estimating 10 holes to the acre, the cost of treating an infested acre is between 35 cents and 40 cents. —John Reynolds.

Hemp Growing

(Continued From Page 5)

ica to compete. The perfection of the machinery, however, together with the demoralization of Europe, combine to create a remarkable opportunity for American producers. There is now no more reason for the importation of hemp fibre into this country than for the importation of wheat. Unless America quickly increases its production of hemp, in fact, the linen industry will be threatened with extinction. These statements are substantiated by the reports of recognized authorities.

California farmers, through the proposed installation of "brakes" in various sections, soon to take place, will be afforded unusual opportunity for making money. Individual small farmers will not find it necessary to purchase machinery, but arrangements are being made whereby mills will be established in the center of communities producing a sufficient quantity of hemp. The plan of operation devised by those who are developing the industry indicates greater returns to California growers than they can obtain from any other field crop for years to come, and is so far-reaching as to include the construction in Pacific Coast cities of mills for the home manufacture of linen articles.

PIPE

RIVETED WATER PIPE

Montague Well Casing and Riveted Steel Pipe for Surface Irrigation.

Oil and Water Tanks, Siphons, Stacks and Steel Flumes.

Write for Price List Number 4.

Montague Pipe and Steel Co.
WELL CASING
San Francisco.

Will RADium Replace MEDicine

Medicines have had their day. The ever-increasing number of cases of Rheumatism, Neuritis, High Blood Pressure, Anemia and many disorders of the bladder, kidneys, liver and stomach, piles, prostate and rectal troubles, eczema and other skin disorders and infections, prove that drugs can offer no more than temporary relief.

The discovery of Radium and its adaptations to the everyday needs of the people is one of the greatest marvels of the age, and should be known to every sufferer.

If, as the results seem to prove, Radium creates new energy, livens up the blood, drives out that run-down weakened condition, YOU should know it. Write for FACTS ABOUT RADIUM, and, how our Radium preparations for internal and external treatment can benefit you. United States Radium Products Co., 424 C. C. Chapman Bldg., Los Angeles, Cal.

"PIONEER"
Blue Flame Valveless Oil Hover
So good you can write your own guarantee. 500-chick, 54-in. Hover $25.00

Send today for circular. If interested in incubators ask for Pioneer 48-p. catalog.
PIONEER INCUBATOR CO.
443 N. Andrews Blvd., Los Angeles, Cal.

THE Cutter LABORATORY

The Name "Cutters" on *Serums, Vaccines and Aggressins* signifies, "Made by The Laboratory that Knows How." Twenty-five years of conscientious endeavor in one line count for something.
The Cutter Laboratory
Berkeley (U.S. License) California

AUTO TRAILERS

$35 to $600

2 and 4 Wheel Auto Trailer Co.
1322 Central Ave.
ADDRESS DEPT. A. LOS ANGELES

AUTOS AND AUTO SUPPLIES

AUTOMOBILE Owners, Garagemen, Mechanics, Repairmen, send for free copy of this month's issue. It contains helpful, instructive information on overhauling ignition troubles, wiring, carburetors, storage batteries, etc. Over 110 pages, illustrated. Send for free copy today. Automobile Digest, 606 Butler Bldg. Cincinnati, Ohio

In answering advertisements, please mention ORCHARD and FARM.

You Need a Farm in Canada

If you are to secure that independence, success and prosperity which has been the reward of thousands of American farmers who have preceded you.

¶ These farmers knew of the rich tracts of Canadian Pacific agricultural land for sale in Western Canada at low prices—open prairie, partially wooded or park lands—all virgin, fertile and productive. They knew they could not obtain such lands elsewhere at such prices—at an average of $18 per acre.

¶ They knew that Western Canada has carried away, year by year, first international honors for wheat, oats, barley and livestock.

¶ They knew of the success that had been won by farmers from their own state who had preceded them. They knew that Canadian farm values are steadily increasing and that each year they delayed they would have to pay more to purchase desirable farms.

¶ They wanted larger holdings for their growing families. They knew they could secure sufficient land upon terms unobtainable elsewhere—20 YEARS TO PAY.

¶ As a result, 16,000 American farmers took advantage of their knowledge and moved to Western Canada last year.

¶ In Canada the government and the railroads help the farmer in every possible way. It is to their interest to do so. Taxes are moderate; laws are just; transportation facilities and markets are excellent. Language, social customs, religion, money and other conditions are the same as in the United States.

Ask the Canadian Pacific about Canada — CANADIAN PACIFIC RAILWAY

Thousands of American farmers have made prosperous homes in Canada. There will be more this year. Can you afford not to follow them?

Investigate these facts for yourself and let us fill your need. Write today for information to

M. E. THORNTON, Superintendent of Colonization
CANADIAN PACIFIC RAILWAY
961 First Street, E. CALGARY, ALBERTA

SAVE MONEY!

SAVE $1.00.

McCall's Magazine, $1.00 a year.
ORCHARD and FARM, $1.00 a year.
(Mention Club Number 14)
Both for $1.00

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American Fruit Grower, $1.00 a year.
ORCHARD and FARM, $1.00 a year.
(Mention Club Number 20)
All Three for $2.00.

We will extend your subscription from date of expiration on these special offers if you are now a subscriber.

SEND YOUR ORDERS TODAY!

ORCHARD and FARM, Los Angeles, California,

Gentlemen: Enclosed please find $..... for which please send me club number .....

Name .....

R. F. D..... Box.....

Post Office ..... State.....

Feed Them Well

—one way to *keep* boys on the farm

OF course your boy knows that "no one cooks like mother." But you can do more for him than merely *cook deliciously*. Your *choice* of foods will please him and be more important to his vital energy and strength.

Bread Pudding

Bread pudding made with raisins is not only delicious but is economical since it solves the problem of left-over bread.

Raisin Pie

2 cups Sun-Maid Raisins, 1½ cups boiling water, ½ cup sugar, 2 tablespoonfuls cornstarch, 2 tablespoonfuls lemon juice, 1 tablespoonful grated lemon rind, juice of 1 orange, 1 tablespoonful grated orange rind, 1 cup chopped walnuts.

Cook raisins in boiling water for 5 minutes, pour into it sugar and cornstarch which have been mixed. Cook until thick, remove from fire and add other ingredients. Bake between two crusts. Walnuts may be omitted if desired.

All measurements for this recipe are level.

Blue Package (seeded) best for pie and bread.

Give Him Raisin Pie

Make your rare pie crust and fill with luscious *raisins!* There is *flavor* for him! The juice forms a luscious sauce.

But there, too, is wonderful nutrition to rebuild his energy and maintain his vim.

Raisins furnish 1560 calories (a unit of food-value measurement) of energizing nutriment per pound. Eggs, milk, potatoes and most meats fall short of raisins in this energizing value.

The energy comes from the pure fruit-sugar of the raisin, which is in practically predigested form. Thus raisin pie revives men after a hard day's work almost immediately.

There is food-iron also in the raisin—good for the blood.

This pie, therefore, is both so good and good for men that you should make it for them frequently.

SUN-MAID RAISINS

Be sure to get the Sun-Maid brand of raisins produced from California table grapes—the finest grown. Tender, meaty, juicy, rich in sugar. All stores sell them. Get a package now.

Raisins are 30 per cent cheaper than formerly—see that you get plenty in your foods.

Seeded, blue package (seeds removed), best for pie and bread; Seedless, red package (grown without seeds), best for stewing; Clusters (on the stem). A delicious quick dessert.

Your grocer has them. Ask for the Sun-Maid brand.

Mail coupon for free book of more than 100 tested recipes for delicious raisin foods.

Sun-Maid Raisin Growers
Membership 13,000
Dept. B-703, Fresno, California

CUT THIS OUT AND SEND IT

SUN-MAID RAISIN GROWERS,
Dept. B-703, Fresno, Calif.

Please send me copy of your free book, "Sun-Maid Recipes."

Name .....

Street .....

City ..... State.....

let it mother your chicks

BABY CHICKS are frail little fellows. They must be fed and "nursed" and watched. For each fluttering bit of chick life represents a chicken. Each represents a future profit. Hence the right start means everything —to the chicks and to you.

Do you know what causes more chick deaths than anything else? Indigestion! For the digestive organs of the baby chick are just as delicate, just as sensitive, as those of the human baby.

Because we feel that nothing is good enough for a baby chick that is not clean enough for a human baby, *cleanliness* is our first consideration in the manufacture of SPERRY BABY CHICK SCRATCH. Cleanliness means a healthy flock—and that means healthy profits. That's why we take care that only prime, clean grains go into this feed. During its entire process of manufacture, the same absolute cleanliness is observed as in manufacturing SPERRY Red Package Cereals for your table.

Years of experience has taught us how to mix a feed with the same food values that the mother hen would scratch for her baby chicks on the open range. That's why SPERRY BABY CHICK SCRATCH is properly granulated and proportioned for fast-growing little bodies. Made of prime, re-cleaned seeds and cracked grains with a small percentage of high grade bone and charcoal—SPERRY BABY CHICK SCRATCH is the best feed-and-health insurance any poultryman can buy for his chicks. It gives them the sturdy start they need.

Remember, too, that SPERRY BABY CHICK SCRATCH is *absolutely gritless.* This means you do not have to pay a fancy price for shell and grit. You, yourself, can supply these more economically.

In the new edition of our booklet, "Makes Hens Happy," you will find quite a bit of help on feeding chicks—and grown-ups, too! Your copy is waiting for you—and it's free. Simply mail the coupon now.

Sperry Baby Chick Mash: This feed meets the demand of many poultrymen for a mash made up of ground grains and high-protein nutrients. It makes for rapid growth without overtaxing the gizzard and digestive tract of the baby chick. It should be fed in conjunction with SPERRY BABY CHICK SCRATCH after the first week. Your dealer has it—

SPERRY Baby Chick Scratch

STOCK AND POULTRY FEED DEPARTMENT
SPERRY FLOUR CO.
204 WEBER AVENUE • STOCKTON, CALIFORNIA

Please send me, without obligation, your booklet "Makes Hens Happy."

Name _____

Address _____

SPERRY PRODUCTS IN EVERY HOME SPERRY FLOUR

ORCHARD and FARM

APRIL, 1922

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Offices: Los Angeles and San Francisco

TEN CENTS

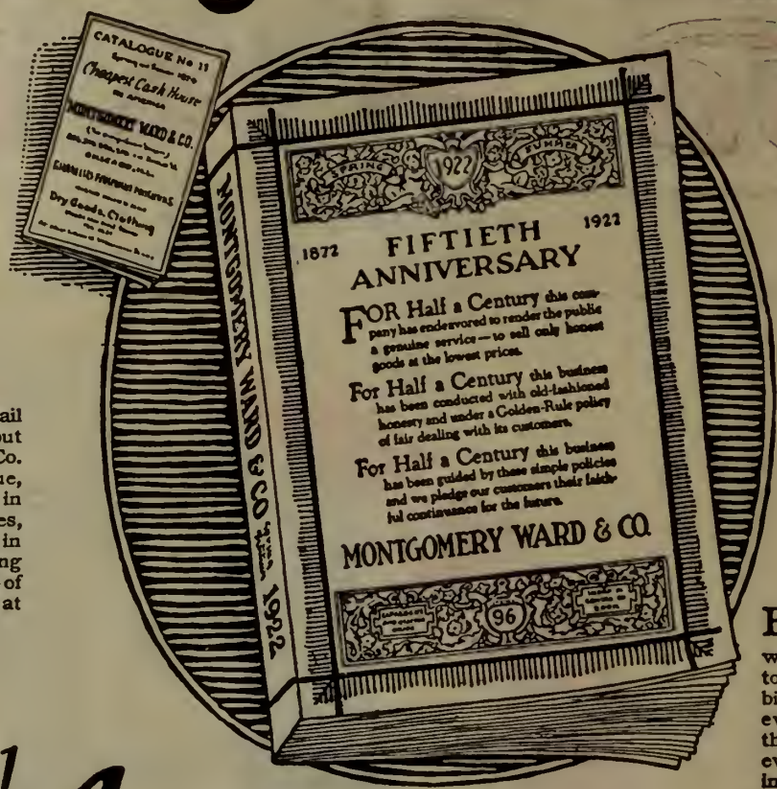
THE ROMANCE OF THE GRAPE—HOW LONG WILL IT LAST?—PAGE 5

Montgomery Ward & Co.

The Oldest Mail Order House is to-day the *most progressive* —

1872

THE first little one-page mail order leaflets were sent out by Montgomery Ward & Co. in 1872. The first catalogue, pictured above, was issued in 1874. It contained eight pages, about three by five inches in size. This was the beginning of the mail order business — of selling goods direct by mail at one small profit.



1922

FIFTY years of fair dealing, of prices that always offered a saving, and today this big Golden Jubilee Catalogue contains everything for the Home, the Farm and the Family — everything at money-saving prices.

50th *Anniversary*

This big Golden Jubilee Catalogue pictured above is priced to match the spirit of the times. Some things are priced at no profit, many things at very little profit. It is your best guide to the lowest prices.

THIS is the Golden Anniversary of Montgomery Ward & Co. We have completed Fifty Years in the service of the American Public.

In 1872 this business was begun in one small room, twelve by fourteen feet.

Today, millions buy from us on faith in the name: "Montgomery Ward."

Upon what is that faith founded? Upon Fifty Years of fair dealing, upon Fifty Years devoted to selling only goods of standard quality at the lowest possible prices.

This 50th Anniversary Catalogue keeps faith with our customers. It is priced to meet present-day conditions. It is filled with new, fresh merchandise with every price based upon the new low costs of production.

Some things at No Profit Many things at Little Profit

At Montgomery Ward & Co. we believe we owe a duty to our customers — that it is our duty to sell everything today at the lowest possible prices.

We believe we owe a duty to the American Farmer. Therefore, we are selling *all our Tillage Tools absolutely without profit to us.*

Many of these tools are actually priced at less than it would cost us to replace them today. This is the way we are keeping faith with the American Farmer.

And to the American Woman we are offering almost equal advantages — New York Fashions, selected in New York by Ward's own Fashion Experts. All are offered at the lowest prices possible today.

Everything needed in the home—everything to make the home more attractive—everything priced at a big saving for you.

The New-Old Spirit of Montgomery Ward & Co.

We are entering our second half century of business existence. And we step forward with the spirit of youth, of progress in Service and Saving for you.

To give you bigger and bigger values, to give you better and still better service, to quote always lower and lower prices — that is our work and our accomplishment today.

Buy from this 50th Anniversary Catalogue. Know that the price you pay is the right price for whatever you buy. Know that every order you send, every letter you write, will be handled in the full spirit of the Golden Rule.

If you have a copy of our 50th Anniversary Catalogue, lend it to your friends.

MONTGOMERY WARD & CO.

KANSAS CITY CHICAGO FORT WORTH
ST. PAUL PORTLAND, ORE.

If you haven't our 50th Anniversary Catalogue, borrow one from a neighbor or write us for one.

OUR EDITORIAL POLICY

ORCHARD and FARM is a magazine of, by and for agricultural people. We believe that to the tiller of the soil is due the best that life affords. We believe that he is the bulwark of the Nation. We honor him as the basic producer. His problems are our problems; his triumphs, our triumphs; his joys and sorrows, ours. To record his achievemente and expose the duplicity of his enemies; to fight for and with him; to give him genuine help and practical information, to assist, entertain and inspire every member of his happy household—that is the policy of ORCHARD and FARM.

ORCHARD and FARM

ESTABLISHED 1888
Published Monthly by Country Life Publishing Company
1111 South Broadway, Los Angeles, California
"THE SILENT PARTNER OF THE SUCCESSFUL FARMER"

YOUR QUESTIONS ANSWERED

ORCHARD and FARM is an institution of service. Subscribers may receive, free of charge, answers to questions upon any agricultural subject. Through its large staff of specialists, and its close contact with authentic sources of information, this magazine is able and willing to serve any subscriber who requires aid or information. Be sure to write name plainly and to give complete address, including street, R. F. D., or box number.

VOL. XXXIV Entered July 16, 1917, as second class matter at the Post Office of Los Angeles, California, under act of Congress of March 3rd, 1879. Subscription price $1 a year. NO. 4

Pithy Paragraphs

"My idea of a real man," said Uncle Wiseacre, "is one who can be on the level, whether he's up or down."

George worked late but never caught up with his work. John started early and was always ahead of his.

It is better to lend than to borrow. Lend a helping hand but don't borrow trouble.

When a farmer sells an old cow, he doesn't know whether he'll buy it back as calfskin shoes or boneless chicken.

Nobody loves a grouch—yet it's well to remember that nearly all idiots are cheerful.

A city man who had been ill and worried, and who had tried golf and other forms of outdoor exercise without relief, was advised to take up gardening. His friends marveled at his rejuvenation of mind and body. Yet no farmer need be told of this mysterious power of Mother Earth.

Because he knows the clean smell of the freshly-turned furrow; because he is close to and in tune with Nature, the "dirt farmer," despite his hardships and comparatively small labor return, is the most content of all human beings.

Jas. C. [illegible]

Editor.

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IS IT YOUR MOVE?

In order that we may give uninterrupted service to every subscriber, it is necessary that we be notified promptly concerning CHANGE OF ADDRESS. Always give the OLD as well as the NEW address. Thank you.

ORCHARD and FARM.

Difficult to Locate the Source of Pain?

"Say Pop, chickens don't chew their food atall, do they?" inquired Johnny. His father explained how their food, after being swallowed, is ground in the gizzard. Johnny pondered. "Gee whiz," he ejaculated, "then when they're sick, they don't know whether its the tooth ache or stomach ache!"

Sometimes, when we humans have swallowed a plausible story, we don't know whether it's our pride or our pocket book that's been hurt most! But that "sick" feeling can be avoided by dealing with reliable manufacturers and dealers, who advertise in reputable publications. ORCHARD and FARM takes pride in its clean record as a meeting place for the highest class of advertisers and the finest and largest list of farm journal subscribers in California. The following questionnaire-directory is just a little "get together" feature, a convenience that every subscriber is urged to use. *"You haven't read the magazine until you've read the ads."*

Alphabetically Arranged Advertising Directory

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Among Ourselves

Coming Next Month—That story of the interesting ranch that was "made" almost overnight. (It was omitted this month for lack of space.) Also watch for some of the most amazing and revolutionary poultry articles yet published—in the May issue. Then, there'll be another dehydration article by Professor Christie, and the series on beekeeping and chestnut growing will be continued. These are but suggestions of the many big features to come.

Winners in the boys' and girls' picture contest, and the prize letter contest for women, are announced in this number. Are you one of the fortunate ones?

And Mr. Mason's thrilling story is completed this month.

Most important of all—if for any reason you failed to receive a copy of the circular described in the last issue, write for it without delay. It describes some of the most remarkable money-saving offers ever made by any publisher. No doubt you are paying the full subscription price for other magazines or buying them at the newsstands, when you could secure them with ORCHARD and FARM, in many cases, **at 50 per cent of their regular subscription cost.** When renewing or extending your ORCHARD and FARM subscription, write us concerning clubs with other magazines. Or send ORCHARD and FARM to a friend and save on other publications for your own use!

SUBSCRIBERS SAY:

None Better—Please find enclosed $1 for my subscription. We would not think of being without ORCHARD and FARM. We think there is none better.—W. Arens, Hornbrook, Cal.

Good Advice — ORCHARD and FARM is a mighty good paper and its advice is well worth taking.—E. J. Torbert, Stockton, Cal.

Very Interesting — I find ORCHARD and FARM a very interesting magazine and learn a good deal from it. I don't like to miss a copy.—J. F. Francis, Oakland, Cal.

A Great Help—We like ORCHARD and FARM and have found it a great help, especially in raising chickens and turkeys.—Mrs. W. L. Cornwell, San Benito, Cal.

THE "GREEN" HAND

Boss—"For heaven's sake, what's happened to John!"

Straw Boss—"Well, I told him to tie the lines around his waist while cultivating, and evidently he unhitched the horse before he untied the lines!"

John's bump of precaution is highly undeveloped. A word of warning might have saved him, but he should have known that almost any hungry horse will run for the barn at quitting time. Speaking of warnings, ORCHARD and FARM wishes to save its subscribers the annoyance of missing a single copy of the interesting issues to come. Hence this confidential tip: Glance at the expiration date on your address label, and renew your subscription well in advance! Better be safe than sorry!

AFIELD WITH THE CURIOUS CAMERA MAN

WHY LIVE IN A CITY—When one can have such a country home as this? It is owned by Leland Fobes, prosperous Placer County poultryman and fruit grower.—Photo by McCurry.

PICKING PEARS IN PLACER COUNTY—See "Bob" Jones' interesting article on page 6 of this number. Placer is getting into print with increasing frequency these days!—McCurry Photo.

NO, NOT A GRAPE ARBOR!—Just the largest wistaria vine in the world, so we are told. And it is still growing—at Sierra Madre, over the home of H. T. Fennell.

A CHARLIE CHAPLIN HEN—This strange bird, although 18 months of age, has never laid an egg and always walks erect. It will not associate with the older birds, but prefers the little chicks. Owned by Joe Vogt, of Chicago.—International Photo.

BANG! ANOTHER STUMP!—This is a familiar sight on many farms where dynamite or giant powder is used in clearing operations. Quicker than grubbing!

A PRETTIER SIGHT than a flock of pure-bred sheep is difficult to imagine. These have paid for themselves in 2 years!

POWER CULTIVATION no longer is theoretical. Here is one of of the most successful of the motor cultivators. More push than pull.

A NEW FARM IMPLEMENT—This unique device, known as the rotary harrow, is the invention of Hiram J. Wilcox, who has been granted a patent. By turning up the wheels in this manner, the operator can move it to and from the job with ease.

THE ROTARY HARROW IN OPERATION—The outer rims are padded so that trees and vines are uninjured should a wheel strike against them. Each 5-foot wheel has 42 teeth, of 7 different dimensions, and the implement is said to pulverize the soil.

ORCHARD and FARM

VOL. XXXIV APRIL, 1922 NO. 4

The Romance of the Grape

THE California grape—jewel of Bacchus' crown and creator of the "iron constitution"—holds the center of the stage.

In an effort to determine whether the popularity and profit-producing propensities of the grape are transient or enduring, ORCHARD and FARM promulgated "fourteen points." These, in the form of a questionnaire, were sent to fifty producers, farm advisers, horticultural commissioners and viticultural authorities throughout the State.

The following brief summary of their replies, together with Mr. Geo. P. Weldon's article on Grape Prospects, page 8, affords interesting food for thought, and perhaps will form a basis for answers to many of the questions that growers and prospective growers are asking:

(1) ESTIMATE OF ACREAGE, OLD AND NEW—PERCENTAGE OF INCREASE — REMOVAL OF OLD VINES, COMPARED WITH PLANTING OF NEW.

Reports from all grape districts of the State indicate new plantings of at least 60,000 acres, with the percentage of increase ranging from 10 to 500 per cent. The new acreage includes all varieties, but *apparently at least 50 per cent of the 1922 plantings consist of wine grapes.* No established district reported a loss in acreage; no district reported any appreciable removal of old vines.

(2) FIGURES ON PROFITS MADE BY GROWERS DURING RECENT YEARS, ESPECIALLY THE PAST TWO SEASONS.

Profits variously reported at from $100 to $1200 per acre, with average prices highest ever known, and income described variously as "very good," very large," "attractive," and "excellent." *Several reports indicated profits on the investment of more than 500 per cent.*

(3) FIGURES ON LOSSES OF GROWERS, AND REASONS FOR SAME.

Many sections reported no losses. Several mentioned theoretical losses due to contracting early on an advancing market. Some districts reported heavy losses from frost, ranging from 25 to 100 per cent, but in many cases partial loss was made up by increased prices. From these replies it would appear that the grower should consider the advantages of co-operative marketing vs. early contracting, and that the prospective planter should give careful consideration to frost records.

(4) VALUES OF GRAPE LANDS NOW AS COMPARED WITH FORMERLY. ARE THESE PRICES, IN YOUR OPINION, STABLE; IF NOT, HOW LONG CAN THEY BE MAINTAINED?

[illegible] reported "stable" [illegible] from $500 to $1500 [illegible] upon age, [illegible] Three reported higher prices than formerly, which probably will remain stable or even increase as long as prices for grapes remain high. Seven expressed the belief present values are unstable. Five indicated values dependent almost entirely upon grape prices. Several expressed the belief that present valuations would be maintained for three to five years at least. Average valuation, all districts, $600 per acre for improved, established vineyards, and $50 to $300 per acre for raw land suited to grape production.

(5) EXAMPLES OF PROFITS MADE BY DEALS IN GRAPE LANDS EITHER BY OWNERS OR REAL ESTATE OPERATORS.

One grower in Napa County paid $600 per acre in 1919, and sold for $1000 in 1921. A Merced County vineyard sold for $600 per acre in 1920, $1000 per acre in 1921, and resold in two weeks for $1500 per acre. A Mendocino County vineyard, purchased in 1920 for $425 per acre, sold in 1922 for $550 an acre. A Yolo County producer, who purchased for $325 an acre five years ago, sold recently for $1000 an acre. A Contra Costa County vineyard was purchased for $95,000, including crop, and the buyer sold the crop for $35,000. A San Bernardino County grower, with 1927 acres, sold his Missions for $150 a ton, average 8 tons to the acre, and has just bought an additional 940 acres from the Fontana Land Co., for a consideration of $125,000. Normally San Bernardino County is not considered a raisin district, yet a grower a mile south of the producer just mentioned, raised 75 tons of raisins on 60 acres, and received for his crop $22,500!

(6) DO YOU THINK THE INVESTOR CAN BENEFIT MOST BY PURCHASING AN ESTABLISHED VINEYARD OR PLANTING UPON RAW LAND?

Many interesting and conflicting answers were received. About an equal number advocated each method, and others said, "flip a coin and take your choice, but consider local conditions." Here are other bits of advice: Beware of old vineyards, poor from neglect; better to buy a producing vineyard than to take a chance on future conditions; plant raw land if experienced, or if not experienced get best advice available; one can figure good interest on a vineyard at $500 an acre, but at higher prices it is better to develop raw land; depends upon capital available; no income can be expected until the vineyard comes into bearing; depends upon class of grape grown; established vineyard recommended for wine grapes in order to reap harvest while the sun shines, but raw land for table grapes; consider everything in purchasing old vineyards, such as appearance and condition of vines, probable infection, irrigation facilities, distance from transportaton.

(7) WHAT, IN YOUR OPINION, ARE THE PRINCIPAL WARNINGS THAT SHOULD BE SOUNDED IN ADVISING PROSPECTIVE GROWERS OR PURCHASERS OF GRAPE LANDS?

Some very interesting and important replies were received, such as the following: Consider present prices abnormal and plant only highly colored grapes; ascertain facts independent of agents; be sure right land is selected, and plant only the best vines; beware overplanting of wine grapes; expect future market depression and plant accordingly; consider drainage; beware alkali; be sure of adequate irrigation, if necessary; learn something about the business before investing; don't put all the eggs in one basket—plant several varieties or plant part of land to other crops.

(8) WHAT IS BEING DONE TOWARDS ASSURING A MARKET FOR INCREASED PRODUCTION?

Advertising, evaporating and drying, manufacture of syrup, co-operative marketing, reduction of freight rates. (Less replies were received to this question than any other.) Many said little or nothing is being done along this line. Does not this situation, combined with the enormous increase in acreage, emphasize the necessity for creating a future market? Many correspondents urged growers to make a *(Continued on Page 27)*

The Greatest "Comeback" Ever Staged

FIVE years ago John Jones of Fresno County postponed the work of grubbing out his grapevines because of the shortage of labor. Now those same vines are his most profitable possession. The annals of agriculture include no more amazing episodes than the "comeback" of the California wine-grape and the raising of the raisin from mediocrity to fame. How long will it last? How far will it go? What is in store for the grape growers? Interesting answers to these questions are included in the accompanying article—The Editor

Fruit on a Thousand Hills---The Story of the Snowflakes

By Robert E. Jones

CONTRIBUTING EDITOR OF ORCHARD AND FARM

THE snowflakes clothe Tallac's Peak with white, a gorgeous greeting to the motor tourist. Melted, these same snowflakes paint Placer's hills with the green of a hundred thousand orchard trees.

And, transformed into electric energy, they heat milady's curling iron and light her boudoir a hundred miles away.

But, although harnessed and put to work, water never tires; and it can perform many tasks simultaneously. California affords no better example of this truth than the combined power and water development which has made possible Placer County's fruit industry.

You have heard the phrase "Science bids the desert drink" and all that sort of thing, but here is what has happened in Placer County: A great public service corporation, The Pacific Gas & Electric Company, has constructed dams for the storage of water to operate power plants. The snow waters thus stored, rush through the power houses, generating electricity which is used in a number of ways. But with this achievement the water has not finished its work.

PERFORMS DOUBLE DUTY

It flows on down to the Placer hills through a series of canals, the first of which was built in the old mining days, and waters 136,455 acres of land which is planted to deciduous fruits. Thus, the same water that has generated electric power, performs a second service. We might go on and point out that the same water floats steamers on the Sacramento River!

A writer for a National magazine, recently visiting Placer County, stood on a knoll near Auburn, overlooking the Sacramento Valley in the distance. Before him, in graceful contour, with long lines of heavily laden trees tracing curves across the home-dotted hillsides, spread the fruit district of Placer. He gasped at the beauty of the scene. It made an indelible picture upon his mind, a picture of abundance, of peace, of richness. When he got to his typewriter, he wrote something like this:

"Standing upon a knoll I saw, spread out before me, the Kingdom of the Earth."

A BEAUTIFUL GATEWAY

You know that is the way Placer County's fruit district impresses one. It hits home hard, no matter whether one is a worker in the fruit, a traveler over the hard-surfaced highways or a homesecker from the East, seeing California for the first time through the Placer gateway.

The transcontinental line of the Southern Pacific Company traverses the entire breadth of Placer County. And although we have level, bottom lands along the rivers of California, that produce more fruit per acre than can be had from Placer's hills, the beauty of the landscape is there. Perhaps that is one reason why there is quite a literary colony at Auburn. The country is a real inspiration in its beauty, as well as a financial success.

Uncle Same's cold figures show this about Placer County:

	Value of Property	Improved Acreage
1910	$10,234,101	98,608
1920	22,718,017	136,455

Although Placer's fruit industry began many years ago, the rapid development in the last ten years has been coincidental with power development. The Pacific Gas and Electric Company built the Lake Spaulding dam in the Yuba River, thus imprisoning snow waters. This water makes its way by irregular stages down the ravines and mountain ridges from Lake Spaulding, passing through numerous power houses and turning dozens of Pelton wheels before it finally is released below Colfax to be spread out fan-shaped on the delta of the hills.

PRODUCT OF "FORTY-NINE"

The fruit industry of Placer County, like all agriculture of the interior valleys of California, traces its origin back to the days of gold. After General John A. Sutter's man, James Marshall, discovered gold on the branch of the American River, the first canals were built on the ridges of Placer County.

Water was led out from the American, Yuba and Bear Rivers for hydraulic giants to wash away the mountains and for sluice boxes. The early miners had that planting instinct which we find in man through the ages and they set out the first cherry, peach, apple and pear trees.

These aged trees may be found today, about the old "diggin's," some of them lost in the new growth of wild stuff which came after the claims "petered out."

Only last summer I discovered an apple orchard in Green Valley, the trees of which were still producing excellent fruit. These old trees were on a little flat, now virtually a plateau, for the earth all around them had been washed away, leaving them at the pinnacle of a hill. They were all that was left save the scars of the hillside, to show that this once had been a thriving community of more than 500 souls.

THE ORIGINAL CANAL

Out of these earlier days, then, came the fruit industry of Placer County. But it was the hardy miner of 1850-51 who gave it a start, for the leading of water from the snow-capped peaks through ditches, really marks the beginning. The first Bear River canal was started at a point opposite the town of Colfax, now the eastern extremity of the commercial fruit belt, and ended west of the town of Auburn. It was started in 1851 and water was delivered to Auburn the following year. This canal was built entirely by hand labor and, oddly enough, the general course of the excavation laid out roughly by these pioneers, was followed in later extensions made by the Pacific Gas & Electric Company.

WONDERFUL TRANSFORMATION

At this early day when the first canals were put through, the upper foothills of Placer were a waste of sage brush and manzanita and, lower down, of dry grass and parched slopes. But along the lines of the old channels, as men became disappointed in their search for gold, they began gradually to drift back to the primal vocation of farming and the first commercial orchards began to appear.

For a number of years orchard development was slow in Placer and its rapid advance of the last decade or two has come coincidentally with power development. The company built its first power line from Folsom to Sacramento and this system at the time was the longest transmission line in the world. After a program of extension was begun, the company took over water rights in upper Placer, built new dams for reservoirs and bought up the old mining canal system.

Today the old Bear River canal is eight feet deep, ten feet wide at the bottom and eighteen feet wide at the top, and includes also a number of tunnels.

THE FRUIT BELT

The orchard fruit belt of Placer extends from Roseville eastward through Loomis, Penryn, Newcastle, Auburn and Applegate to Colfax and Chicago Park, ranging from an elevation of about 200 feet to approximately 2000.

At the height of the season it is not uncommon for a trainload a day of fruit to leave Newcastle, which is in the heart of the district.

The leading varieties shipped are peaches and plums, with considerable quantities of pears, cherries, table grapes and apricots and some specialties such as figs and oranges. Generally speaking, however, the growers do too well with deciduous fruits to give much attention to the citrus varieties. Shipments for the last season totaled right around 5000 carloads.

A SHIPPING ADVANTAGE

Placer County enjoys the same "postage stamp" rate on fruit that all other districts have, and that rate, following war time conditions, is a good deal higher than the growers want. But Placer does have advantage for Eastern shipments in being located on the main line of the Southern Pacific Railroad.

Much of the fruit crop is iced at the big plant of the Pacific Fruit Express at Roseville before it starts "over the hill" for eastern markets.

If there is a level orchard in Placer County I have never seen it. It is truly the farming country of "a thousand hills." Because of this fact, cultural methods are different from those practiced in most parts of California where trees are grown on level lands.

In the main, the orchards are clean cultivated; that is, the majority of orchards are clean cultivated, except where a great, glittering granite boulder crops out, for there are many such boulders in the Placer hills. But the orchardist has learned to plow around these. He has learned, too, that near these great rocks his fruit ripens first and often the family is favored with fruit much in advance of the season.

TRACTORS USED SUCCESSFULLY

Tractors are used to a considerable extent considering the rugged topography of the country. Joe Francis, of Auburn, scion of a pioneer fruit grower, tells me that he has had considerable success with the track - laying type of machine. He has used it on the steepest of hillsides.

What might be termed the "trickle" system of irrigation is practiced. Outlets for irrigation ditches or pipes are along the edge of the higher slopes and the water is allowed to run slowly down along the tree rows. In order that each tree may get sufficient water, the tiny ditch often describes nearly a circle around it and then continues on to the next tree, always following the contour of the land.

PRUNING METHODS

Placer growers quite generally have practiced a pruning system that keeps their trees close to the ground. This facilitates picking. Due to the activities of the Farm Bureau, the "long pruning" system is spreading rapidly and has many ardent advocates.

Orchardists of this foothill belt vie with those of Vacaville, Solano County, and the down-river district of Sacramento for the honor of shipping east the first consignment of deciduous fruit for the season.

This "consignment" ordinarily consists of one 10-pound box of near-ripe Purple Guigne cherries. Sometimes it

(Continued on Page 32)

"Standing Upon a Knoll, I Saw, Spread Out Before Me, the Kingdom of the Earth."

PRACTICAL POINTERS
IN FEW WORDS
for Busy Farmers

Protecting Rice From Birds—Rice growers in Hawaii are purchasing from Pacific Coast dealers large quantities of a special brand of explosive, known as "black rice bird powder." It is a fine black powder that makes a loud report when loaded in blank cartridges. The fields are guarded by laborers with shotguns. The Hercules Powder Company is said to have sold a great amount of this powder for shipment to the islands. It is stated local growers are planning to try the powder during the coming season.

Freshening Season Important — The time of the year that a cow freshens seems to have considerable to do with the profit she returns, says the United States Department of Agriculture. An analysis of the figures obtained from many cow-testing associations shows that in most sections the cows that freshen in the fall and early winter produce the most milk and butterfat and bring in the greatest income over cost of feed.

Hot Water Treatment of Grape Cuttings.—Many complaints concerning loss and damage attributed to mandatory treatment of grape cuttings by the hot-water method, have resulted in the issuance of a special warning by the State Department of Agriculture. It is pointed out that the use of "direct fired" outfits renders temperature control uncertain, involves danger of (1) damaging vines by overheating, and (2) reduction in effectiveness in destroying Phylloxera infestation. Another factor, said to have caused loss, is failure to cool properly after dipping. It is suggested that the vines be cooled down by hosing or by being submerged in cold water until atmospheric temperature is reached. D. B. Mackie, Department Entomologist, takes the attitude that losses have been due to improper application of the method rather than to any defect in the method itself. From other quarters, however, has arisen a concerted "howl" which the Department proposes to meet with a new set of regulations.

Hogs Gain When Fed on Rice—Rice combined with barley and tankage as a ration for hogs, produces satisfactory gains and good killing quality, according to the results of a test held at the University of California Farm. Eight lots of ten hogs each were fed for 63 days, all of the lots except one receiving rice in some form as a part of the ration. The daily average gain ranged from 1.29 lbs. to 2.08 lbs. In each case gains were made on less than 500 lbs. of feed for 100 lbs. of gain. At slaughtering five lots killed out hard, one medium and two soft. The pigs used in the test were produced by the University of California Farm herd and were uniformly well-bred hogs.

Goat Milk Can Be Separated—Goat milk can be separated with only a very slight loss of fat in the skimmilk, reports G. D. Turnbrow, Assistant Professor of Dairy Industry, University of California. This fact was shown in a recent experiment in which two types of separators were used, one of the disc type and the other of the tubular type. The cream tested with the disc type separator was 34 per cent while the other tested 33 per cent. In both cases the skimmilk tested 0.015 per cent. These results indicate that either type of machine is efficient in separating goat milk. The cream secured in the tests was churned in a hand churn. It broke readily and produced a fair grade of butter.

Effective Management Necessary in Poultry Farming—Effective business management is necessary in the operation of a commercial poultry farm. In a survey made by Professor Dougherty of the University of California Farm A averaged 176 eggs per hen and gave a net profit on each hen of $4.43 for the year 1919. Farm B, with an average yield per hen of 143 eggs, netted a profit of $1.30. Farm C had an average production of 140 eggs and made a profit of $2.08. Farm D, received 129 eggs per hen and made a profit of $2.12. These farms were all in the same county and had equally favorable locations. Each was a 1000-hen farm and all costs including interest on investment, taxes, fire insurance, hired labor, etc., were included in the expense when figuring net profit. Such instances are typical, according to Professor Dougherty. The human element or the ability of the poultry keeper is the most vital factor governing success or failure. Not only the hen herself but the "Man behind the hen" must be equal to the job.

Chopped Wire Not Good Forage—Recently a dairyman reported that a mysterious disease was killing his cattle. He stated that one animal showed signs of being sick for four or five days, that another apparently had been a little "off feed" and that both died the same night. Investigating veterinarians who performed post mortems found the death of each animal was caused by a short piece of baling wire that had penetrated the covering of the heart. Two animals dying the same night from similar affections prompted an inquiry as to the kind of feed they had been receiving recently. When it was found that chopped hay constituted a part of the ration, the situation was somewhat clarified. Those who consider it more convenient and economical to feed dairy cattle chopped hay, must bear in mind that a small piece of wire, a nail, or other indigestible and penetrating material, when mixed with such feed, may prove to be costly.

Control of Garden Slugs—Gardeners, mushroom growers, and truckers frequently observe irregular holes in the foliage of such crops as lettuce, tomatos, peas, and beans, either grown under glass or in the open, and mushrooms from which holes have been cut as by a mouse or rat. Upon close observation, a glistening whitish substance will be seen on the plants or near by, and search under stones, old boards, and rubbish will disclose the cause of the injury—the garden slug. Arsenic and other poisons are not especially favored in slug control, but lime and salt may be used in moderation. To protect young plants make a ring of salt or lime around the tender plants. When the slug touches these substances it will wriggle into the material. This causes it to secrete slime copiously and soon it exhausts itself and dies. When abundant in the field or garden, the slug is more difficult to control, and the only solution of the problem consists in thoroughly cleaning up the hiding-places of the pest, around the edges of the garden, under old boards and stones, and in any place that is cool and moist. These places should then be sprinkled with lime and where practicable lime should be applied directly to the area and plants on which the slugs are feeding. In time this will drive them away.

Hog Vaccination Hint—Packers constantly complain of injury to hogs through injection of serum into hams and shoulders. Veterinarians and others are urged to make injections of serum in the flank or axillary space (in superficial muscles between the front legs).

Egg Yield Greatly Increased by Feeding Animal Products—A great increase in egg production may be expected when poultrymen and farmers in general recognize the importance of animal feeds, especially in the fall and winter rations for the laying flock. The demonstration of the superiority of feed combinations containing meat scrap, milk and its products, tankage, or fish scrap is one of the most valuable additions to our knowledge of poultry management. The addition of from 10 to 25 per cent of one of those named in most cases would make a remarkable increase in production.

Treatment of Frost-Injured Citrus and Walnut Trees—Growers are advised to delay pruning back the young trees until new growth has started, with the one exception that where the trees are found on examination to be killed back to or below the graft union, it is recommended that the trees be cut off and crown-grafted immediately. Experience indicates that badly frosted walnut trees may usually be saved by permitting a vigorous sprout to grow and remaking the tree from this sprout. There are many orchards which in their life history have been frosted back to the ground at least once and some several times, and still have developed into profitable producers.

Cows on Roughage Alone Produce Milk Economically—What will a dairy cow do in the way of milk and butter fat production when fed on roughage exclusively? Perhaps the consensus of opinion is that she will not do very well, but the United State Department of Agriculture has some figures that show what a few cows did that were fed on alfalfa hay and corn silage, without grain.

A mature Holstein cow was pastured on irrigated, tame grass at the Department farm at Huntley, Montana. During the winter months she received nothing but corn silage and alfalfa hay. She was under test and was milked three times a day. For 140.5 days and 98 nights she was on pasture. During the rest of the year she consumed 9014 pounds of alfalfa hay and 8985 pounds of corn silage, a rather large amount of bulky feed. While this ration was fed the cow maintained her weight at practically what it was at the beginning of the test, and produced 14,210.1 pounds of milk and 470.24 pounds of butter fat.

Crushing Clods With Lime—We may be sure that when either alfalfa or sweet clover grow successfully, the soil is well supplied with limestone, says the California State Department of Agriculture. Even if they are not to be grown, however, the liberal use of liming materials will be found a useful measure in preventing formation of clods. Lime acts as a soil flocculator and its effect on the physical structure of soils is often sufficient to justify its use, aside from any other consideration.

The "Wonderful" Sex Detector—Many persons have paid good money for worthless contraptions known as "sex detectors," with which they were told, it was possible to determine the sex of the chick that would be hatched from an egg. Other equally absurd powers are claimed for these devices—absurd because the so-called "detector" usually consists of a small plummett-shaped device of metal or wood. It is unreasonable to suppose that merely suspending such an inanimate object by a string and holding it over an egg, could give it supernatural powers! The different motions of the "detector" are explained upon the principle of muscular contraction in the arm or hand of the operator.

Livestock Solves Problem of Profitable Alfalfa Production—Farmers in sections where alfalfa hay is a cash crop will find it to their advantage to change their practice and market this roughage through livestock. On the Newlands Project in Nevada, the recent prices for alfalfa hay have been $9 to $9.50 a ton f. o. b. cars, which nets the farmers about $5 or $6 a ton at the stack. Although these prices were considered fairly good by many of the farmers (under present conditions) figures collected recently show that $7 a ton is near the cost of production, and this does not include any labor income for the farmer! It is suggested that the farmer feed the hay to a good grade of dairy cows or other kind of livestock, particularly cattle and sheep. Many farmers in this section already have demonstrated livestock will solve the problem of making alfalfa profitable. The use of live-stock keeps up the fertility of the soil and provides concentrated products that do not have to bear such heavy freight costs.

Ben Gonnadooit Says

I believe the Mexicans has th' best motto ever invented: "MANANA," meanin' "TOMORROW." In other words, never do one day what you kin put off until th' next. I had a experience here lately that proves the point.

My wife had been after me for two months t' take off th' glass f'm th' hotbeds, an' store it away fer the summer. But somehow, I wasn't able t' get around to it.

Well, th' next afternoon an airplane that was circlin' over our place developed engine trouble and derned if thet aviator didn't land right in them hot-beds, smashin' 'em to smithereens!

A little later here come some officials o' th' aviation company in a big car an' wanted t' know what I would settle fer. I told 'em $200 would scarcely cover th' damage, but seein' as how it was a unavoidable accident, I would take that small amount.

An' would you believe it, th' manager set right down an' writ a check fer two hundred, addin' $25 fer our kindness in takin' care o' th' aviator!

Gosh, th' whole garden fence, equipment an' hot-beds w'an't worth $50. In fact, I begged them old sashes when Ike Tingle tore down his hen-house, an' they didn't cost me nothin'!

What if I had cleaned up th' hot-beds when my wife first mentioned it? Like as not th' glass would a' be'n off an' stacked away in th' barn an' all th' young plants set out.

As it was, by delayin' th' matter I made enough to buy grub all summer and I won't have to raise no garden at all, bein' relieved of all that hoein' an' weedin' right in the midst o' th' fishin' season. Yes, that there "MANANA" is a derned good motto.—BEN GONNADOOIT.

Timely Information for Fruit Growers

By George P. Weldon
CONTRIBUTING HORTICULTURAL EDITOR OF ORCHARD AND FARM
POMOLOGIST, CHAFFEY JUNIOR COLLEGE OF AGRICULTURE

Arsenical Sprays in the Limelight

DECIDUOUS fruit growers who have been using such sprays as arsenate of lead, which contains the violent poison arsenic, have in recent years experienced some difficulty in disposing of fruit which showed a coating of the spray material upon reaching the market.

George P. Weldon

Since arsenical poison sprays are used principally in the control of the codling moth on apples and pears, it is the growers of these fruits who have been brought face to face with certain facts that promise to have a marked bearing on their spraying practices.

ANY CASUALTIES?

Arsenical sprays have been used in the control of insects of the chewing kind for more than half a century and the records do not show that any one has ever been poisoned from consuming the sprayed fruit; then why is the agitation assuming such prominence now?

The answer may be found in the fact that three years ago the coming season, some California Bartlett pears were observed by a pure food inspector in the city of Boston to have on their surface a white coating of spray. An analysis was made of the fruit to determine the content of this coating and of course arsenic was found.

According to reports there was present a sufficient quantity of the poison to endanger the health of any one who might eat the fruit.

Acting upon his authority, the official condemned the pears, dumped them into the bay made famous long ago by the dumping of tea, and immediately California fruit shippers became alarmed at what had taken place.

SERIOUS SITUATION CREATED

The situation created by the incident related, threatened serious complications in the marketing of California pears and apples. Hence Director of Agriculture G. H. Hecke, upon the urgent request of interested shippers and growers, made a trip East to investigate. Stopping first in Washington, D. C., Mr. Hecke enlisted the aid, through the Secretary of Agriculture, of representatives of several of the Government bureaus, and in company with duly appointed officials of the U. S. Department of Agriculture, continued his journey to Boston, where all the facts regarding the case were uncovered.

Since that time the State Department of Agriculture, co-operating with officials from the Bureaus of Entomology and Chemistry of the U. S. Department of Agriculture, as well as other Government and local agencies, has made an exhaustive study of the whole question of arsenical sprays, and every effort has been put forth to allay any fears or to prevent any injury to health from the consumption of California pears and apples.

ARSENICAL SPRAYS NECESSARY

Investigators were met with the fact that in the control of codling moth nothing that has ever been discovered, will take the place of an arsenical spray. Hence, their efforts from the start were directed, not towards finding a substitute for arsenical sprays, but toward improving the methods of application so that less spray would find lodgement upon the fruit, and towards compelling the removal of excess quantities of spray which might be found adhering to the surface of California fruits.

FINE MIST SPRAY USED

It was found that growers in many cases were using too coarse nozzles and that as a result the spray was being applied in much larger quantities than necessary, thus resulting in a heavy rather than a fine coating on the fruit.

The use of nozzles throwing a very fine spray under high pressure was advocated, and it was found that better spraying, with less material and more effective control, was the result.

FRUIT IS WIPED

In addition to a change in methods of spraying, growers and packers where spraying was done improperly, were compelled to wipe any coating of spray from the surface of the fruit. This was done by the use of cotton gloves at the time of packing.

So thorough has been the campaign to correct the danger that was said to exist, that Eastern shipments of fruit have not aroused suspicion the past season, and there is every reason to believe that no difficulty will be experienced in the future.

FRUIT GROWERS SINCERE

Certainly it is far from the intention of California fruit growers or shippers to place for sale in the markets of the country, any fruit which cannot be eaten with safety, and they have consequently fallen in with the recommendations which have been made to protect the health of the consumer. From a sanitary standpoint they believe in wiping the coating of spray from the fruit.

Yet many down deep in their hearts believe that the scare has been more or less unwarranted, and that the exceedingly small amount of lead arsenate on the skin of a well sprayed apple or pear is not sufficient to cause even a stomach ache!

On the other hand, if the chemist finds that arsenic is present in toxic doses, even in the form of insoluble arsenate of lead, there is reason to be careful. It is hoped that these investigations may result in better methods of control for codling moth, and that the growers will not be deprived of the use of the only spray that has yet given good results in this work.—G. P. W.

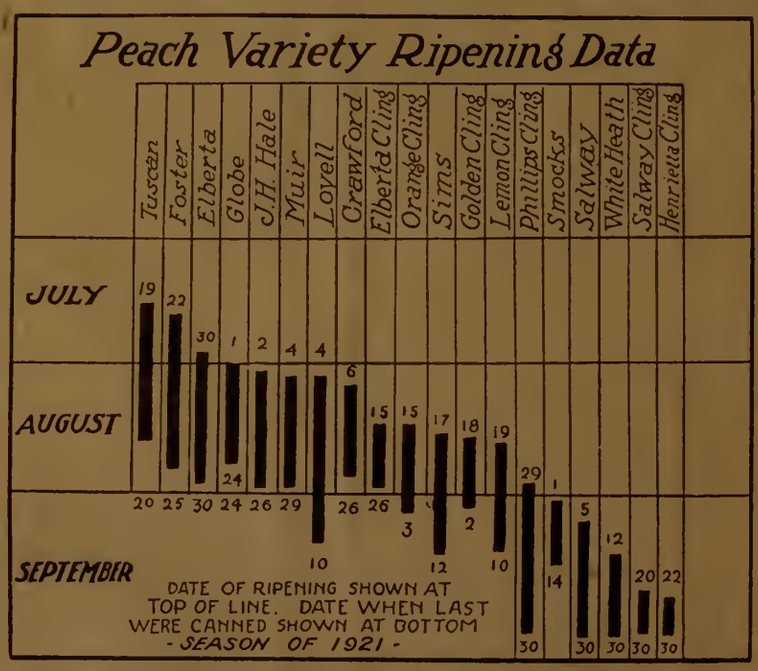
Ripening Time of Peach Varieties

PEACHES are grown in California for three purposes, namely: Canning, drying and shipping while fresh. Notwithstanding the purposes of the grower when he sets out his orchard it is important and desirable to select such varieties that the picking season will extend over a considerable period of time. This will enable the grower to take care of his crop with convenience and with a minimum loss.

From the standpoint of the canner also it is important that producers choose for their leading varieties a succession of those kinds which are characterized by early, mid-season and later ripening. The longer the season for any variety, and the greater the period between maturity of the earliest and latest ripening kinds, the better the canner is satisfied.

IMPORTANT DATA TABULATED

Recently, through the kindness of Manager Wm. J. Schaeffer of the California Canners' Association, the ripening time of the leading South-California varieties was secured from data gathered during the season of 1921. This information is given in the following table and is conveyed graphically by the accompanying diagram:



VARIETY	RIPE	END OF SEASON
*Tuscan	July 19	August 20
Foster	July 22	August 25
Elberta	July 30	August 30
Globe	August 1	August 24
J. H. Hale	August 2	August 26
Muir	August 4	August 29
Lovell	August 4	Sept. 10
Crawford	August 6	August 26
Elberta Cling	August 15	August 26
Orange Cling	August 15	Sept. 3
Sims	August 17	Sept. 12
Golden Cling	August 18	Sept. 2
Lemon Cling	August 19	Sept. 10
Phillips Cling	August 29	Sept. 30
Smocks	Sept. 1	Sept. 14
Salway	Sept. 5	Sept. 30
White Heath	Sept. 12	Sept. 30
Salway Cling	Sept. 20	Sept. 30
Henrietta Cling	Sept. 22	Sept. 30

*Under the name Tuscan are included the Tuscan of Northern California, and the Ontario (Southern Tuscan).

While the season for each variety given in the foregoing table varies somewhat, with soil and climatic factors, the dates are very suggestive and will convey to one who is contemplating the planting of a peach orchard, some idea as to varieties that should be chosen.

THE CLING VARIETIES

In the case of the three leading cling varieties of Southern California, viz., Ontario (Southern Tuscan), Sims and Phillips, it will be seen that the ripening season overlaps to such an extent that the canneries are assured of a constant supply of fruit from the time when the first peaches ripen until the end of the season. This fact adds very materially to the commercial importance of these varieties.

THREE LEADING FREESTONES

It will be seen also that the three leading varieties of freestones used for canning in Southern California, viz., Elberta, Muir and Lovell, begin ripening at approximately the same time and have so nearly a contiguous season that, in sections of heavy planting, they are apt to cause a glut in the cannery.

ADVICE TO PLANTERS

Prospective planters will do well to study this table carefully, in order that they may not make the mistake of planting varieties that will demand too much work in a short period of time, which is apt to result in waste, as well as general inefficiency in the handling and marketing of the crop.—G. P. W.

The Grape Situation

NEVER in the history of the grape industry have profits to the grower been greater than during the past three years.

Naturally we are forced to ask ourselves the question: **Will this condition continue for some years to come?** No one can give an intelligent answer to this question, for no one knows. Our judgment must be formed through a knowledge of the past.

When thinking of grapes, we should keep in mind the three purposes for which this fruit has been commercially grown: (1) for the table; (2) for raisins, and (3), for wine. If the writer's observations are correct there has been a heavy planting the past two years of grapes that are adapted for each of these purposes.

THE WISE PLANTER

Perhaps the greatest wisdom has been displayed by those who have planted vines of such varieties as the Muscat, that can be used for any one or all of the three purposes for which grapes are grown.

Those who have confined their planting to the varieties used exclusively in the making of wine or for drying, may find themselves in the same boat with many another man who has placed all of his eggs in one basket, who knows?

TABLE GRAPE GROWERS

The grower of table grapes has prospered in recent years as never before, and while the general situation that followed prohibition has aided him, as well as other producers, with a ready market and good prices, *his prosperity began before the days of prohibition.*

One of the great events in the history of the California fruit business was the passage of the so-called "Fresh Fruit Standardization Law" in 1915. Immediately upon the enactment of this law, a State-wide effort was made to prevent the sale of immature grapes. The effort was such a success that now practically no grapes are shipped green, and upon the arrival of our fruit in Eastern markets, it is palatable and finds a ready sale.

EFFECT OF STANDARDIZATION

At one time, prior to the days of standardization, the markets were flooded with early season green Malagas and other popular table varieties. The disastrous effect of this practice of shipping green is well known.

Today the table grape grower finds himself protected against practices which at one time were driving him "to the wall," and the future looks brighter than it did at that time.

RAISIN GROWERS ORGANIZED

The raisin grape growers are splendidly organized for success, and in recent years the market has been good. What would happen if the sale for wine grapes became so slow that large quantities of inferior raisins would be made is problematical.

No one dares predict the outcome, for predictions made in the past have been so hopelessly wrong in the case of the grape industry that it is the safest thing to avoid them.

FUTURE OF WINE GRAPE

As for the future of the wine grape industry, a still more uncertain condi-

(Continued on Page 21)

EDITORIAL DEPARTMENT

Timely Topics among Farm Folk

James C. Knollin, Managing Editor

Sensational Price Reductions

FARMERS who have been awaiting a lower scale of prices on farm implements and tractors are rushing to place their orders at the new—and in many cases amazingly low—levels now prevailing.

One ORCHARD and FARM advertiser announces this month a reduction in the price of a high-grade disc plow from the old level of $440 to only $127! Another offers a two-bottom plow free with every tractor!

And the tractor "price war" is the talk of the country, with Henry Ford, International and others engaged in price-slashing performances that have astounded all observers.

The belief is general that the final result will be an increase, rather than further reductions.

The usual explanation of the present situation is that the manufacturers and dealers, like the farmers, have passed through a trying ordeal and must raise money to meet their obligations.

One of the largest implement manufacturers announced a loss for the year 1921 of more than $9,000,000, while other concerns sustained losses of $3,000,000 or more.

In proportion to the present cost of materials and labor, implement and tractor prices in many cases are ACTUALLY BELOW PRE-WAR VALUES. And, considering the loss in efficiency that may result through the use of inadequate or worn out equipment, it is questionable whether any farmer can afford to await a problematical further reduction. In fact, the predicament of the implement industry seems to be the farmers' opportunity.

In the words of Rotary Club members, *"When millions of men buck up, think up and talk up, business will wake up."* The time has passed for sitting tight. Let us all make business building a "buy-word."

The Desk as an Idea-Generator

DON'T look down upon "the Desk Man"! Most of the big ideas of the modern world have been conceived at desks. And this applies to farmers as well as other workers!

This is an age of planning and headwork, study and knowledge. Many a farmer has received the inspiration for his success from the books, bulletins and papers that he read in the evening by the light of his desk-lamp. And many another farmer who has conceived an original idea, although "catching" it, perhaps, while at work in the field, has developed the details with pencil and paper.

The only "desk man" who is really to be pitied is the cog-in-a-machine who gets into a rut. The desk should be the accessory, not the fact.

True, the desk holds no place in the lives of some men. But only rarely is real achievement built upon muscle alone, and the check-book-stub system of keeping books.

The desk is associated with "head-work," and (whether it's right or not) the world measures the value of a man principally from the neck up!

Is Hog Cholera Really Conquered?

WITHOUT reflecting in any way upon the scientific achievements and broad-minded policies of American hog cholera serum manufacturers, many leading breeders, feeders and buyers of hogs are asking, "Is hog cholera really under control? Are its ravages decreasing?"

Some even go so far as to maintain that any decrease in the death rate has been due to improved methods of care, feeding and sanitation, rather than vaccination.

And others are certain that vaccination is killing as many hogs as the disease.

As for the latter contention, it may be dismissed with the statement that hogs are not killed by the use of good serum, properly administered. These desirable factors, unfortunately, do not always obtain; some deaths, therefore, have resulted.

But the feeling is general that serum has not accomplished all that was expected of it. What are the reasons?

One very logical explanation apparently has been quite generally overlooked, namely, that there are other diseases closely resembling cholera upon which ordinary vaccination, either by the single or double method, can have no influence.

Of particular interest in this connection is a communication recently received by ORCHARD and FARM from J. C. Quinlan, widely known San Francisco veterinarian. Dr. Quinlan says in part:

"Recently I experienced an outbreak of a serious disease among [illegible] hogs on a ranch near San Francisco. These animals had been vaccinated against cholera, and for a few days the situation was very puzzling to me, as well as to other veterinarians. Some called it cholera and some swine plague.

"After considerable study and several postmortem examinations, however, I concluded that I was dealing with a disease not much known in the United States, but prevalent in France and Switzerland—known as swine erysipelas or red fever.

"This disease is caused by an organism known as the Rouget bacillus, which may be found upon microscopic examination. The discovery was confirmed by two laboratories, one of which injected the bacilli into white mice, with the result that the mice died within twenty-four hours. The blood taken from the hearts of these mice was found, under microscopic examination, to contain a plentiful supply of this fatal bacillus of Rouget.

"To the casual observer the symptoms of hogs suffering from this infection are difficult to distinguish from those of hog cholera or swine plague; in fact, there may be a difference of opinion among veterinarians. To be positive in the diagnosis it is necessary to make a microscopic examination.

"At this writing, to my knowledge, there is no serum in this country for vaccinating hogs against this disease, but it can be manufactured readily if there is sufficient demand.

(Signed) "J. C. QUINLAN, D. V. S."

The above communication may explain a large number of peculiar outbreaks in areas supposed to be protected by vaccination, and it is to be hoped that further observations will be made. Perhaps our error has been in trying to prevent one disease with a treatment created for another.

Dreams Are Coming True

A FEW years ago the most sanguine friend of agriculture would not have dared to predict the triumphs achieved by American farmers during the past two years.

These have been due, not so much to a friendly administration, as to the unity with which the farmers have DEMANDED certain reforms.

A righteous cause, intelligently and vigorously upheld, is certain to win out in the long run. The country is inclined to take the farmer at his own valuation—and that is getting higher right along!

A Wonderful Record

PRINCIPALLY to the farmers of America and their families is due the remarkable development of one of our greatest National institutions, the mail order house of Montgomery Ward & Co. For this firm, now celebrating its 50th anniversary, has grown from a little store with resources of less than $2000 to an organization supplying 5,000,000 customers and doing an annual business of nearly $20,000,000.

And the farm men and women have comprised the majority of these millions of customers! In fact, A. Montgomery Ward conceived the idea for the business as the result of his acquaintance with farmers while clerking in a country store. The first organization was known as "The Original Grange Supply House," catering to Grange members.

Now the buildings of Montgomery Ward & Co. have a floor space of more than 100 acres and storage facilities for $60,000,000 worth of merchandise.

There is a lesson for every one, no matter what his occupation, in the magnificent achievement of A. Montgomery Ward and his partner, George R. Thorne. For the present business has been built upon the principles of originality, hard work, honest dealing, attractive prices, quick service and a spirit of co-operation. Upon these principles any business will prosper, whether it be manufacturing, merchandising—or farming.

ORCHARD and FARM

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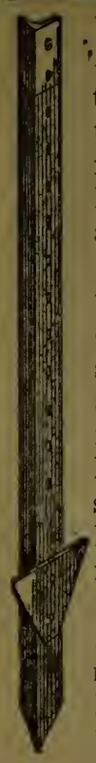

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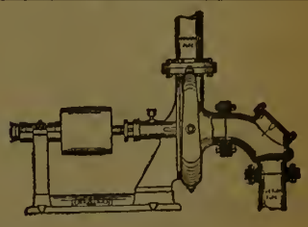

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LONESOME VALLEY

by ALBERT J. MASON

ILLUSTRATED BY GEORGE GRANT

In Two Parts—Part II

THE STORY THUS FAR

JOHN DEAN and his wife, Barbara, with Frederick Deering, a wealthy young lawyer and society man, as their guest, undertake a motor trip from a Southern beach resort to one of Dean's stock ranches in the Sierras.

While crossing Lonesome Valley, a desolate region, they are caught in a blizzard and find their gasoline supply exhausted. Knowing that rescue is improbable, Dean decides to walk to a mining settlement, known as Howell's Camp, to summon aid.

Almost the entire population of the camp having gone to the nearest railroad point, Argus (colloquially known as "Argo") to attend a dance, only two miners, Jerry O'Neill and Bill Jerome, remain at Howell's.

After John has been gone several hours, Deering discovers a deserted cabin near the car, where he takes Barbara, now suffering from the cold. Here they find a rusty stove, firewood, a small quantity of beans and some tea. Barbara falls asleep upon an improvised bed of coats and robes. Deering binds her ankle, which she has sprained while walking to the cabin.

Meanwhile Dean finds he has miscalculated the distance. Benumbed by the intense cold and biting wind; exhausted by hours of plunging through snow-drifts, he finally comes within sight of some buildings, only to fall before he can reach them. But just as he collapses, he puts all his remaining strength into despairing cries for help.

UNWILLINGLY Barbara drifted back into consciousness, her aching muscles protesting against the slightest motion. At length a truant sunbeam forced her to open her eyes. Blinking, she stared at the rough ceiling of the cabin.

"Where am I?" was her hazy thought. Then suddenly she sat bolt upright.

Like a flash she recalled the events of the past few hours and almost simultaneously saw Frederick Deering uncomfortably braced against a box before the stove, still sound asleep.

But what of John? Where was her husband? Her glance roved about the cabin; then stiffly she climbed to her feet. A twinge from the injured ankle made her wince.

Glancing downward, she blushed furiously at sight of the neat bandage enveloping the swollen member. She was thankful that Deering was not awake to observe her confusion. Her stocking and shoes lay near the bed he had improvised for her. Dropping again to the floor, she donned them hastily and with a few trial steps apprised herself that the sprain was not serious.

Barbara hobbled to the doorway and drew aside the blanket Deering had hung over it. She was fairly blinded for a moment by the dazzling brilliancy of the sunlight reflected upon the snow. The air was crisp, and as she stepped outside her ears almost immediately tingled. But the depressing chill of the night had been dissipated by the rising sun.

Yet her heart sank as she sensed their utter isolation. She picked her way around the cabin and looked towards the three buttes. They stood out as though within a stone's throw, although she knew they were very far away. And nowhere was there even a sign of a human being! To the north stood the car as they had left it, and to the east and south was only an endless waste of white.

New and awful fears clutched at her heart. It must be late in the morning, she thought, yet her husband had not returned. Horrible visions assailed her. She imagined him lost among the giant drifts, frozen perhaps—with gaunt, hungry wolves—

As though fleeing from her own terrifying thoughts, Barbara rushed again into the cabin and stood with heaving breast, pressing both hands to her mouth to suppress a scream.

The rustle of her entrance roused her companion. Half-dazed, Deering sprang to his feet. "Oh, I'm so sorry. I didn't intend—" he began.

Still nearly crazed with terror, she ran to him and shook him fiercely by the lapels of his coat. "Fred, he hasn't come! John hasn't come! Oh, what has happened to him? What shall we do?"

"Barbara, you mustn't give up! John is all right, I haven't a doubt. You know how strong he is. But perhaps he was unable to find a team or truck. Or maybe he was so exhausted he couldn't tell his story; possibly even, he was temporarily out of his head. You know that long walk may have been pretty hard on him. I think it was farther than he realized. But he never has quit in his life. You know that!"

She half moaned in an agony of fear.

"There, there, now," he soothed. "Brace up, girl. It won't help a bit to lose your grip. Somehow I feel everything is going to be all right!"

Finally his apparent assurance served partially to calm her fears and she dabbed at her eyes with a ridiculously small handkerchief, extracted from her bag. Then, catching sight of her face in the little mirror, she hastily brought into action her powder-puff and some hairpins.

Seeing that he had succeeded momentarily in quieting her, Deering opened the door of the ancient stove. Only a few embers remained of the pine-knots he had inserted before falling asleep. He hurried outside to get more.

Before entering again, he took a deep breath of the winelike air, and tried to force a smile. But his hasty survey of the situation had not served to diminish his own anxiety.

WHAT was that?

To Deering's utter amazement, Barbara was singing. As he stepped inside, she greeted him with a bright face.

"I'm going to be a good sport," she announced. "I'm going to believe John is safe. I won't give up, either! *I won't!*" She was talking rapidly, her voice rather high-pitched, in a pathetic effort to hide her nervousness.

"Now, how about some breakfast?" she continued gaily. "We must eat something. Hello! What's this?" she was examining the jar of beans.

"That, with the tea, was all I could find here," he explained.

Momentarily she sobered, but quickly recovered her spirits.

"Beans and tea! Well, that's a queer breakfast combination. But beggars can't be choosers. Let's see, here's just one old sauce pan. I'll take some of your snow-water and start some of the beans a'boiling, and then we can make tea. But gracious, we'll have a long time to wait." Her mouth drooped pathetically.

"Oh, I know! I just thought!" She ran to her coat, and delving into the pockets, triumphantly brought forth two milk-chocolate bars, one of which she placed in his hand. "These will tide us over until the beans are cooked. And surely John will come before night. Don't you think so?"

"I feel positive of it," he answered quickly, and immediately fell to wishing that he did.

As a matter of fact, Deeering secretly had reached the conclusion that Dean had perished. He felt that if John had reached the camp at all, he must have arrived before daylight. It was now nearly ten o'clock, and help should have come hours before. Yet, even while pondering upon this appalling thought, he joined in Barbara's mirthless laughter.

She had been exploring the cabin again. "Oh, see what I've found," she cried. "Come playing cards!" She handled the greasy deck gingerly. "I'll play you penochle," she challenged, "to see who washes the dishes—dish, I mean."

"You're on," he answered, arranging boxes for chairs at the rickety table. And soon they were deeply absorbed in the game.

THE sun had reached its zenith and started upon its downward westerly path. The beans had been cooked and partially eaten with little wooden paddles, over which Barbara had made merry. The one dish had been washed (by Deering) in snow-water, then used for tea and washed again. And now they were absorbed in a new game of cards.

He studied her face and marvelled at her courage. Not once had she faltered in her determination to suppress her fears. True, a shadow of anxiety now and then clouded her unnaturally bright eyes, but as quickly was effaced by a smile.

Judging from her manner they might have been upon the sun-porch of the Country Club. He felt again the old attraction that had so drawn him to her at the Beach; found himself considering a desire to catch and hold the slender hand that dealt his cards.

He tried it and was surprised that she did not draw away. Rather, she dropped her cards, and, resting her other elbow upon the rude table, cupped her chin in her hand and gazed at him seriously.

"I—I'm finding it a little hard to—to be brave, Fred," she said hesitatingly. "But you—you'll take care of me, won't you?"

"Always, Barbara. And, remember, everything's going to be all right." He stroked her hand gently, and leaning forward, looked so intently at her that she lowered her eyes.

"Barbara, I think a lot of you—more than of any other girl I've ever known. Yes—Yes, I know—I know I am too late. But you don't mind my telling you? I—I just couldn't help it."

She shook her head wearily, still finding, perhaps, some support for her over-strained nerves in the warm clasp of his hand, and too tired now to dwell upon the incongruity of their position.

"You've been awfully good to me, Fred. I do appreciate it," she murmured, finally. "I don't know how you ever got me to this cabin. And then you stayed awake and chopped wood, and—why, you must have watched the fire almost until daylight, for the cabin was still warm when I opened my eyes! You're a dear boy." Impulsively she raised his hand and pressed it to her cheek.

The color rushed to his face and his neck muscles grew tense. Hastily he pushed back his box, sprang to his feet and busied himself with the stove. Wild thoughts surged through his mind. He could not leave her, yet dared not take her with him in an effort to reach civilization. In fact, he doubted his ability to find his way out alone, much less accompanied by her. And to follow John Dean's trail might mean only a similar fate for him, with Barbara left unprotected, to meet a horrible death.

With their little store of food, they might live a few days, but if Dean, indeed, were lost, there was almost no chance that rescuers would appear before they succumbed. In the meantime—what? Were they destined to perish here together? He could believe in no other ending for their adventure.

Perhaps, he thought, the Gods had chosen this manner of punishing them for what, at the time, had seemed a harmless enough flirtation. Or had the Fates decreed a few blissful hours before— His hand touched the cold steel of the little revolver in his pocket, and he straightened, gazing fixedly for a moment at the cabin wall. Why not? Why—not?

When, at length, he turned again, Barbara had dropped her head upon her arms, and he could see that she was weeping softly.

He knelt beside her and put his arm about her shoulders. "Oh, poor little girl. What is it?" he whispered.

"I'm so tired—and miserable—and—and afraid. I can't pretend any longer. I'm afraid—I'm a-f-fraid," she sobbed.

Again he tried to comfort her. He

(Continued on Page 12)

But the Giant Was Too Quick for Him . . . The Revolver Fell Harmlessly to the Floor.

"Miss California"

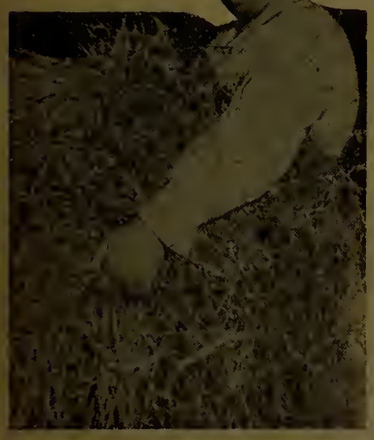
SHE is a real dirt farmer—and proud of it! But that's not half the story. Read the brief account below and decide for yourself whether a woman can be a success as a rancher.

WOMEN throughout the West are justly proud of the honor that has come to Miss California Gibson in her appointment as one of the three directors of the $15,000,000 Glenn-Colusa Irrigation District.

In appointing Miss Gibson to this position of high trust, the Board of Supervisors disregarded political prejudice and were brave enough to appoint the person best fitted to the office, irrespective of political traditions.

Miss Gibson, or "Miss California," as her neighbors know her, is no novice in agricultural management. For 16 years she had shared with her brother, Gion Gibson, the management of the J. S. Gibson Company 2177 acre ranch, three miles northwest of Williams.

This ranch is known as the largest diversified irrigated ranch in the country in the control of a woman; for since the recent death of Gion Gibson, the sister has been in full control of this half million dollar property.



Miss California Gibson

As a girl, California Gibson was given broad social opportunities. She attended Miss Head's school in Berkeley, where the more successful of the large ranchers of that day were accustomed to send their daughters to be "finished."

"I never cared for society," Miss Gibson says. "What I liked best when I was a girl was to help my father in the management of the ranch, and particularly to ride the range. I used to go out upon my horse early in the morning and superintend the work of the men with their eight-mule teams."

TO SUCCEED BROTHER

Gion Gibson had been one of the three directors of the Glenn-Colusa Irrigation district, the third largest irrigation district in the United States, including 103,000 acres of the best lands in the two counties. The position is one of great responsibility, for upon successful management of the project depends the welfare of the towns of Colusa, Williams, Maxwell, Willows, Hamilton and numerous smaller villages.

The board of county supervisors sought a successor to Gion Gibson. The women of the two counties proposed California Gibson.

The women said: "Appoint the best fitted, whether man or woman." And to back up their advice the women held a mass meeting on January 26, after which they organized an automobile parade, visiting each supervisor and demanding "Miss California's" election.

After two meetings of the supervisors Miss Gibson was appointed.

LIKES THE PROSPECT

"In a way it is nothing new to me," Miss Gibson says. "I know what it is to live at the end of the ditch and the problems of the ranch have been my problems for years. I can rather take this place in the management of the ranch and the distribution of my time in any social [illegible] state."

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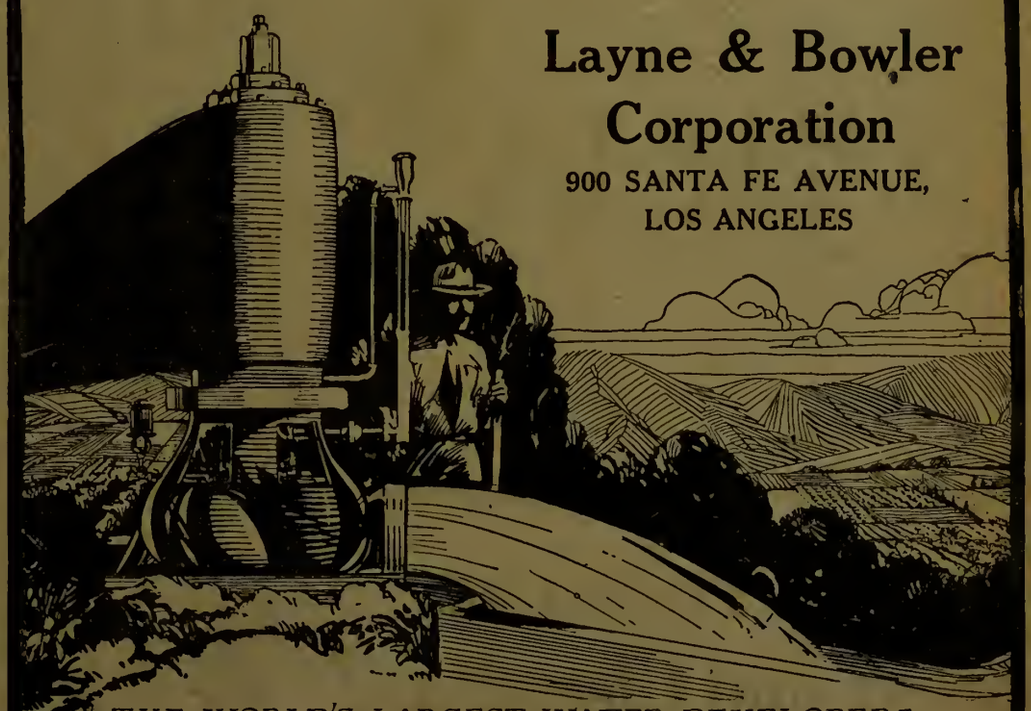

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FUMISPRAY kills by contact and fumes caterpillars, cutworms, thrips, aphis and moths. Citrus and deciduous growers find it frees their orchards from all kinds of scales and pests. It is the truck farmers' salvation.

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SAN FERNANDO—San Fernando Feed and Fuel Co.
SANTA MONICA—George Hart

Lonesome Valley

(Continued From Page 10)

whispered into her ear, but she would not raise her head. The perfume of her hair intoxicated him. His arm tightened about her shoulders. He spoke to her now in a hoarse voice. He was thrilled with her yielding softness. Then Frederick Deering forgot the lonely desert, forgot the cabin, forgot the ties that bound her, forgot himself.

"Barbara, listen to me!" He drew her suddenly to him and held her close. "I love you. You are mine! Kiss me! Kiss me!" His eager lips sought her mouth. His hot breath frightened her.

With sudden realization of his intention, she screamed and began to struggle fiercely. "Let me go! Let me go!" she panted. With all her might she pushed at him with both hands.

He caught her wrists and held her like a wayward child. Glimpsing his eyes, she quivered in terror.

"Fred, Fred! You don't know what you're doing! Let me go—you must—"

But he smothered the words on her lips, and as she struggled impotently, kissed again and again her cheeks, her eyes, her neck, her mouth.

SUDDENLY there was a gust of cold air and the cabin was flooded with light. Deering wheeled like a frightened animal. Barbara, released, fell back against the rough logs, where she leaned, clutching at her throat.

"So this is th' way ye take care of another man's wife! Ye dirthy, low-down, sneakin'—Arrrh!" With an expletive that ended in a snarl, a great, bearded man advanced upon the thoroughly frightened little lawyer. In his hand the big fellow carried the blanket he had ripped from the doorway. Now he tossed it upon the floor, and hitching up his belt, stood glaring at Deering like a ferocious bulldog.

The latter backed away, eyeing the intruder. His hand slid surreptitiously into his pocket. But the giant was too quick for him, and suddenly he found his wrist pinioned in a crushing grip, while the little revolver fell harmlessly to the floor.

The big fellow stooped and picked it up. Turning the gun about in his hand, he laughed aloud. "How come yer ma t' let ye play with that?" he demanded. Then his face hardened again and he drew his heavy eyebrows together in a frown.

"I allus make it a rule, when I get a chance, t' shoot a coyote on sight," he continued. "I reckon this here toy'd do the business close up, this way. Now, ye'd better say yer prayers." He had stepped to the other side of the cabin and was sighting the little revolver, which was almost lost in his great paw.

Suddenly his arm stiffened and his eye drew a bead along the barrel. Deering's face blanched and he all but fell to his knees.

Barbara screamed. "Don't! Oh, don't do that!"

Almost in one jump she reached the side of the big man and flung aside the great, menacing arm. "Please, please don't," she pleaded, breathlessly. "You mustn't! He is—he is my friend."

"Oh!" The revolver dropped to his side and he looked from her to Deering and then stared at her again. "Oh!" he repeated and turning, threw the little gun far out into the drifted snow.

It was not until now that Barbara sensed the significance of the stranger's presence. Suddenly her face lighted up.

"You—you have come from John—my husband! You have come to rescue us! Is John—did he—"

"Yer husband is safe, ma'm," the big fellow answered gently, "hut a bit too weak to come, himself. Just a little rest an,' sure, he'll be as good as ever."

"Oh, thank God, thank God!" she cried, and after the manner of a woman, fell to weeping for her joy.

"LET'S get out o' here." Their rescuer began to gather up the robes and wraps. "Here, you. Carry some o' these." He dumped the pile into the arms of Deering, who had not yet regained his power of speech.

They made a strange sight as they filed through the cabin door—first the burly Irishman breaking the trail; then Barbara, limping, and finally the little lawyer, staggering under his burden.

Tied to the abandoned car they saw a team. The horses were hitched to a bob-sled. And soon, swathed in robes and almost buried in the hay with which the box was filled, they were off towards the distant buttes.

It was nearly sunset when the horses, white with the frost of their own breath, plunged through the last snowdrift and drew up before the shacks of Howell's Camp. And almost before the sleigh had come to a stop, Barbara was out and up the stairs of the "hotel." Deering, reaching for his bag, started to follow her.

"Jest a minute." The driver laid a heavy hand upon his arm. "*We* don't get out here. We jest *pause* a little while."

"But—but—I don't understand! I—I am with Mr. and Mrs. Dean. Is not John Dean there—in that building?"

"Yes, and the saints be praised, him an' his purty wife is prob'bly havin' th' happiest reunion of their lives. But as fer you, yer off to Argo, so ye kin ketch the midnight train!"

And so saying, he sprang again into the sleigh, brought his whip down over the backs of the startled horses, and drove at a run to the barn.

"Bill, oh, Bill," he called. The shuffling form of Jerome appeared in the doorway.

"I say, Bill. This *gentleman* (he emphasized the word with elaborate care), is one of the party I jest brought in f'm th' desert. He says he'll give twenty dollars t' make th' midnight train f'm Argo. Will ye hitch up another team an' drive him in?"

"Will I? Fer twenty dollars? Sure!"

"All right. Get a move on. No time t' lose."

When his friend had disappeared in the direction of the horse stalls, he turned once more to the cringing little man who still sat helplessly in the sleigh.

"There ain't no room for you in Howell's," he said. "In fact, there ain't room fer you and me in the same county, and this here county is my permanent home." He stood for a moment glaring, as though challenging Deering to reply.

But the latter said nothing, and the big fellow turned contemptuously on his heel and walked with long strides towards the rough building that passed for a "hotel."

A MONTH passed, and still the mountain country was locked in winter's grip. But the frost-king held no terrors now for the two who sat before the big fireplace in the Sunny Slope ranch house.

At Dean's feet lay one of his gaunt wolfhounds, blinking comically in the warmth. And above the master's head drifted smoke clouds from his cigar. A Chinese servant noiselessly deposited a pine-knot upon the fire.

Until now they had said little about their thrilling adventure. But already time was erasing the horror of it all.

"How long it seems," mused Barbara, "since that awful night in Lonesome Valley. It's almost like a dream to me." She shuddered, drew nearer, and slipped her hand into his.

For a time they sat in silence. Finally, John spoke. "We owe our lives, dear, to Jerry O'Neill. But for his keen ear, I might have died within reach of the camp. God let him hear my call." She raised his hand and pressed it lightly against her lips.

"As soon as I had revived sufficiently to tell my story, Jerry volunteered to go and find you," her husband continued. "And somehow I knew he would not return until he did."

"Yes, we owe a lot to Jerry," she agreed. "His is a heart of gold. In spite of his rough exterior, he has a wonderful character. But I don't understand yet why—" she hesitated.

"About Deering? That *was* queer, the way he hurried off without even coming up to the hotel to see me. All Jerry said was that Fred insisted on

going right in to catch the midnight train, and so he had Bill Jerome drive with him to Argo. And Fred hasn't even written a line since! I'd like a chance at least to thank him for taking care of you. I guess he was so disgusted with my stubbornness and so used up from the experience that he simply couldn't wait to get back to civilization. Oh, well—perhaps some day I'll learn to listen to reason."

"You *are* stubborn, dear," she agreed. "But you can always be relied upon to see a thing through to the end, and that's more than can be said of many men."

"Thank you for that," he smiled. "It must have been terrible for you—that waiting, in the cabin—so long. How did you pass the time—just by playing cards?"

She glanced at him quickly. For the hundredth time a terrifying thought harassed her. Had Jerry told her husband of the incident at the cabin; of the scene confronting him upon his arrival there? No, no, it could not be! Through all the weeks since their return, John had treated her with more than his usual tenderness and solicitude. And now he was gazing dreamily into the fire, his mind apparently undisturbed.

"We played games until we were dizzy," she finally answered. "I had to do something to keep my mind occupied or I should have lost my reason. I don't believe I shall ever enjoy cards again. Did—er—did Jerry tell you how—how he found us?"

"Yes," he laughed. "Jerry said you were playing penochle like the very divvie (to use his own expression), and that you were so absorbed in the game at first you didn't even notice he had come!"

Her laugh rang out and echoed through the big room. "I'm afraid he exaggerated a bit," she said, happily.

The fire had burned low. Drawing her slippered feet up under her, Barbara snuggled against him upon the big divan. "I'm rather glad Fred did desert us," she confided softly. "I've had you all to myself for four whole weeks."

"And they've been very happy weeks, sweetheart. We can laugh now at some of our experiences, but we know how nearly Lonesome Valley came to being for us, the Valley of the Shadow. And it has brought you very close to me. But tomorrow we must go home—by train," he added, quickly. Then kissing her, he smiled into her eyes. "I'll wager one thing, Barbara—you'll never *forget* Lonesome Valley."

"Never, *never*," she agreed, "as long as we have life—or tea—or beans."

Tractors on Southeastern Farms

A STUDY of the reports of 684 tractor owners in Alabama, Georgia, North Carolina, South Carolina, and Tennessee which has just been completed by the Division of Agricultural

Engineering, United States Department of Agriculture, is of interest to California producers.

The summary shows that in general these men are satisfied with their machines and expect to continue using them. The reports were made in March, 1921, and at that time 86 per cent of the number reporting believed that their machines would turn out to be profitable investments, and 90 per cent stated that they intended to use them during the ensuing year.

Each farmer was asked how many days of man labor his tractor saved annually and the average of the replies was [illegible] days. The average of

(Continued on Page 25)

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"Bob" Jones' Corner

Little Stories of Farming

Women Farmers—Professor Edwin Voorhies of the University of California College of Agriculture secured an uninvited mass of publicity recently, when after a lecture, he was quoted as stating that "Agriculture is Not the Woman's Sphere."

Robt. E. Jones

The alert reporter sensed a news story that would keep going for several days and made good use of the copy. Voorhies at first was not pleased at the twist given his remarks, but being a philosophical young man, finally saw the humor in the situation and rather enjoyed it.

In this day of the ascending feminine, mere man must be mighty careful at trying to limit the sphere of woman. Of course, we like those women best, through a chivalrous sense, if for no other reason, who permit the men to take the hard rubs of the world and spend their time keeping the home in order.

But now and then there are women who have peculiar capabilities at farm management and who also have no ties to interfere with such means of expressing their individuality. It certainly is right and a help to humankind that these women be allowed full sway for their capabilities. Some of the outstanding successful women farmers of California are Mrs. Ruth Hard, manager of Anchorage Farm at Orland; Mrs. California Gibson, who has succeeded her recently deceased brother, Glen Gibson, in charge of the J. S. Gibson Company holdings in Colusa County, and Mrs. Eliza Shephard, who manages the Jack London Ranch at Glen Ellen. Doubtless there are many others.

Prosperity and Farming—Perhaps one reason for the ascendancy of the farmer to the seats of the mighty is the fact that this distressing period of depression has taught "Business" very definitely that the farmers' prosperity means prosperity for business. This is shown very strikingly in the reports of mail order houses, located mainly in Chicago, whose business fluctuates to a nicety as the farmer's dollar grows or shrinks. It requires no great mentality to know that every sort of business must thrive or suffer just as the farmer's pocketbook fattens or shrivels, but times of prosperity are times of forgetfulness. When the farmer's privations became the privations of business, he found plenty of nurses. Fortunately, the period is coming when the nurses may be discharged for all signs point to a revival both for the farmer and for business.

Virden Moves Headquarters—Charles E. Virden, the dynamic fruit man, formerly General Manager of the California Fruit Distributors, who has become a packer within the last two years, has developed his business to such an extent that he has moved his general offices from Sacramento to San Francisco. Virden's company has grown since its organization until now it embraces the meat as well as the fruit and vegetable packing business. It is established in the principal fruit and vegetable growing centers of California. A new canning plant is to be built at Marysville and a plant at San Jose recently was acquired. Last year the Virden organization canned a great deal of fruit for growers on a co-operative basis.

Trees Hurt by Cold—While the cold period of January, a record breaker in the history of California, did not harm the farmers of the Sacramento and San Joaquin Valleys as much as it did the citrus growers of Southern California, the effects of the cold may be noted today in cities. Eucalyptus and pepper trees about Sacramento were "scorched" quite severely. The long duration of the cold snap, rather than a particularly low temperature, did the damage.

Trees for State Highways—Generations of the future in California will appreciate work that is being done by the California State Board of Forestry, under the leadership of Forester M. B. Pratt. The planting of shade trees along State highways has begun. This year has seen the setting out of young trees along the main artery of the State highway system from Davis, where the University Farm is located, to Sacramento, the State Capital. This artery is a part of the Lincoln Highway from San Francisco to New York. Trees were supplied from the State Forestry nursery, which is located on this road, between Sacramento and Davis. The growing of trees at this nursery has been in progress for more than a year, but the buildings have only just been completed. The little plant is a fine addition to the improvements along the main road.

Forging Ahead With Holsteins—Robert Condee of the George Junior Republic at Chino, told me at the recent Stockmen's Week at Davis that Southern California Holstein Breeders are much enthused over the progress they are making in the industry. The southern breeders have an enthusiasm which is hard to beat and certainly they have shown that enthusiasm by acquiring as fine a lot of bulls as can be found anywhere in the United States. The next few years should yield some remarkable records from Southern herds. It will be recalled that the George Junior Republic Holstein herd won many prizes at the last State Fair.

High Prices for Grapes—With the vines still naked of leaves and buds hardly beginning to swell, grape growers of the Lodi district are receiving offers of $90 a ton for their season's crop. The year promises to be as big a bonanza for the grape grower this coming season as it was last. There seems to be no waning in the prosperity of the grape grower. Do you know that grapes brought California more money than any other California crops last year, even exceeding the sum total paid for oranges? Here are the figures:

Raisins	$24,700,000
Wine grapes	25,420,000
Table grapes	9,375,000
	$59,495,000

To Boost Pure-breds—One of the real accomplishments of Stockmen's Week at the University Farm was the organization of the California Livestock Federation, composed of the various pure-bred organizations and members. This Federation's prime purpose, of course, is to further the interest of the pure-bred livestock industry. The organization is headed by J. L. Thompson, Manager of Straloch Farm, Davis, as president; William Briggs of Dixon, as vice president; Frank Bullard of Woodland as second vice president; Robert Condee of Chino as third vice president and Professor E. H. Hughes as secretary. The board of directors consists of the officers named and J. A. Bantting of Mission San Jose.

Journalism for Students—While the College of Agriculture is yet to start a journalism course as a part of the regular work, some of the students at the University Farm, Davis, have arranged with various newspaper men and farm editors for a series of lectures on journalism. These lectures are intended to assist members of the staffs of the California Countryman and the University Farm Agricola, both publications of the College of Agriculture students.

A Pig Record?—From the Kansas City Weekly Star I learn that Alex Lindsey of Elk City reports forty-five pigs in three litters from a Poland-China sow. He asserts that this is a world's record—an average of fifteen pigs to the litter. Have we any Pacific Coast entrant for honors?

To Correct Hard Pan—The Federal Department of Agriculture reports some progress in the correcting of hard-pan-

ing of soils in irrigation districts which, it reports, is frequently due to the action of salts of sodium, carried in irrigation water. This hardening of soils stops percolation of water and penetration of tree roots. The method of treating calls for corrective applications of salts of calcium, iron and aluminum. Further information regarding this treatment may be obtained from the Department.

California has a great deal of hard pan land which could be made very valuable if some economical method of disintegrating the hard pan could be discovered.

S. Glen Andrus, a farmer of the Fairoaks, Sacramento County, district, has learned that "chiseling" his orchard soil to the depth of 18 inches or more has a highly beneficial effect. His orchard was cut two ways by these chisels, drawn by a 45 horsepower tractor and the trees have experienced a stronger growth than ever before.

Before the land was "chiseled," it was difficult to irrigate sufficiently, as the water seeped down to the hard pan and then got away without doing much good.

Two World's Records—Harry Bridgford, who is a most conscientious and hard worker in the pure-bred Holstein game, reports two noteworthy records in his herd at Patterson. "Bessie Veeman Alcartra Prilly" has established a new senior 2-year-old record of 1062 pounds of butter from 27,255 pounds of milk, and her half-sister, Louise Alcartra Prilly, has made a new junior 3-year-old record in the 7-day period of 40.19 pounds of butter from 590 pounds of milk. This is the first 40-pound record in the class.

Leading With Vegetables — California leads the United States not only in total volume of vegetables grown, but also in production per acre, as recent figures from the Federal Department of Agriculture show. Here are some of the average yields per acre:

	Yields Per Acre U. S. aver.	Cal. aver.
Snap beans, tons.....	2.3	4.3
Cucumbers, bushels ..	75	98
Tomatoes, tons	4.9	5.4
Asparagus, crates	105	123
Spinach, bushels	354	893
Onions, bushels	245	245
Cantaloupe, crates ...	161	175
Strawberries, crates .	75	108
Watermelons, number.	402	677

The cantaloupe crop in 1921 brought California $8,543,238 and the lettuce crop brought $4,524,742. No State in the Union can compete with California in the number of watermelons per acre. Maryland is the closest competitor with 625 melons to the acre.

A Gopher Getter

THIS lad, Lisle Percival of Lathrop, Cal., is one of the most successful young gopher catchers in the State. Here he is shown with one day's bag with a Chubbuck-type, double-catch trap.

Lisle is one of many boys who have made money catching gophers. Some ranchers pay as much as 10 cents each

for dead gophers. Lisle and his brother caught nearly 300 last season, entirely eradicating them from twenty acres of alfalfa and forty acres of pasture.

A feature of the trap used by the boys and since adopted by scores of ranchers is a double-spring, which makes it possible to catch the smallest gophers with one spring.

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Get All the Power You Pay For

You can't get all the power that's in the gasoline you buy if your piston rings are worn and leaky. McQuay-Norris Piston Rings stop this waste. They increase power—save gas and oil and reduce carbon trouble. Whatever the make or model of passenger car, truck, tractor or stationary engine, you will find the McQuay-Norris line is complete for every need. Through the addition of McQuay-Norris Wainwright Pistons and Piston Pins to the McQuay-Norris Piston Ring line, you can now secure for your gas engines complete McQuay-Norris-made Pistons, Piston Pins and Piston Ring equipment.

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LEAK-PROOF — an exclusive two-piece design, preventing loss of gas and compression. Gives equal pressure at all points on cylinder walls. For all piston grooves except top, which should have Superoyl. Each ring packed in a parchment container. Price per ring—

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In Canada, $1.50

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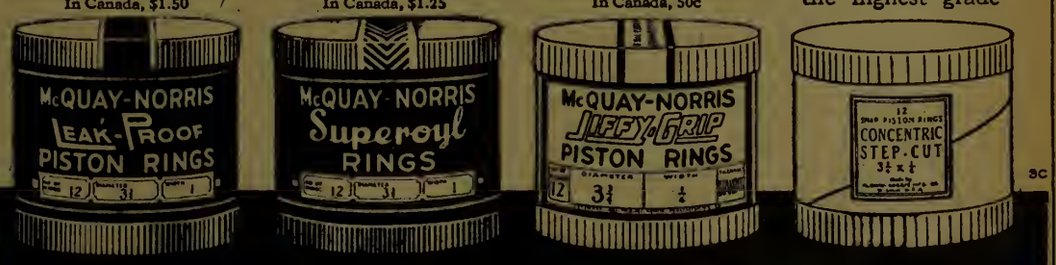

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Your money back if it fails. Take no chances this year with traps or rat poisons. Only Triple Strength Rat Virus will positively kill rats, mice and gophers and be absolutely safe and sure. Give it according to directions—if after 30 days' trial you find any rats or mice—we will refund your money without question. Send $1 bill today sure.

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CHESTNUT TREES

Italian Seedlings, 3-4 ft., 75c; 2-3 ft., 60c; 1-2 ft., 40c. Small trees transplant well. Can plant in April as they bud out late.

Felix Gillet Nursery,

C. E. PARSONS, Prop.,

Nevada City, Calif.

***Books Bought and Sold*—Taxidermy, Kodak Finishing — These departments indicate the scope of the "Farmers' Classified Market Place."**

See pages 30 and 31.

Chestnut Growing

By C. E. Parsons

Article II—Propagation and Varieties

NET returns of $125 to $250 or more per acre, may be expected from a 15-year-old planting and the revenue should increase up to 25 years.

The grower should remember also that he is planting the nuts not for his profit alone, but also for the benefit of succeeding generations, since the tree is very long lived.

The growth is about as rapid as that of most fruit trees and the grove may be interplanted to peaches or other faster-growing fruits, or vegetables suited to soil and market conditions of the district.

Grafted chestnut trees bear in four years and many seedlings are very precocious, bearing good crops at five or six years.

Apparently little skill is required to grow chestnuts successfully. Given proper soil conditions, the tree is less exacting in its requirements than any of the standard orchard types.

The pruning is simple, and spraying is unnecessary except for an occasional dormant lime sulphur wash; and this only when it seems desirable.

I have yet to hear of any insect pests damaging the chestnut trees on the Pacific Coast; in fact small boys seem to be the only serious pests in Nevada County!

PROPAGATION

Propagation of chestnuts is not easy; yet with care, both the seedlings and grafts may be made to grow. Seed for planting must be used while fresh. The nuts used for seed may be mixed with moist sand in the proportion of one-third nuts to two-thirds sand and kept in boxes in a cool cellar until they sprout, when they should be planted in well prepared soil, either where they are to stand permanently or in the nursery.

Another method of preserving the nuts which I have found very satisfactory, is to mix them with moist earth and leaves so that the whole is a loose mass. Then place in boxes with the tops level with the ground and cover with leaves. For protection from rodents, a small mesh wire netting should be placed over the top of the boxes. Occasionally all methods of care prove valueless and the nuts mould in spite of every precaution.

METHODS OF CULTURE

Following are brief outlines of methods of propagating, planting and care, based on the writer's observations and the experience of others:

Seedling trees grown from nuts taken from grafted trees come very true to type and many seedlings from nuts grown on seedling trees bear good crops—sometimes even better than the parent.

Since the chestnut is rather difficult to graft, the question of whether to use seedling trees (to be top-grafted) for orchard planting or the more expensive grafted trees, must be decided by each individual.

Grafted stock will bear sooner (first nuts in about four years) and will produce true-to-type nuts that will mature all at the same time, and considering every factor therefore, is cheaper in the long run.

Grafted trees cost from $25 to $35

Evidence That California Is a Good "Chestnut State"

Above, left—The young lady is standing near a 5-year-old grafted tree which carries a good crop. Right—A 15-year-old French chestnut (Marron Quercy) growing at 3000 feet altitude in Nevada County, Cal. Below—a pile of burrs showing appearance, as gathered from the tree.

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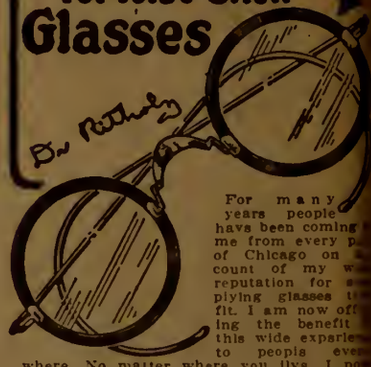

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Warwood, W. Va. Jan. 5, 19..

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Dear Doctor:—I have been using the Shell Spectacles you sent me and will certainly keep them and will remember you when we are speaking of spectacles. I received the spectacles and you received the pay and everything is O. K.
Ever your friend.
Andrew J. Long, Box 17, 22nd Street, Warwood, Wheeling, W. Va.

Fond du Lac, Wis., Jan. 2, 19..

Dr. Rithnlz,
1466 W. Madison St., Chicago, Ill.
Dear Sir:—Received glasses O. K. and I am more than pleased with same. Had my eyes fitted by opticians, but none gave me satisfaction. The glasses I got from you I can read the smallest print for hours without feeling the least little effect.
Yours truly, Ge. Ste...

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If you send your order at once I will make you a present of a handsome Velveteen Lined, Silver Back, Pocket Book Spectacle Case which you will be proud to own. Sign and mail the coupon now. Dr. Rithnlz, Madison & Laflin Sts., Station C, Chicago, Ill., Doctor of Optics, Member American Medical Association, Illinois State Society of Optometrists, Graduate Illinois College of Ophthalmology and Otology, Famous Eye Strain Specialist.

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You may send me by prepaid parcel post a pair of your Extra Large Tortoise Shell Gold Frame Spectacles and Automatic Test Chart which I can use free of charge. I will wear the glasses 10 days and if convinced that they are worth several times the price I will send you $4.49. Otherwise I will return them and there will be no charge.

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R. R. ..... Box No. .....

State .....

Varieties of Chestnuts

1

2

3

4

5

Description of Varieties

(1) Japanese (2) Marron Combale (3) Marron De Lyon (4) Marron Nousillard (5) Marron Quercy

For detailed information concerning each type, see article below.

an acre; seedlings one-half as much. The cost of stock in fact is about the same as that of fruit trees, but there is less planting expense, for there are fewer trees to the acre.

VARIETIES

Although much might be said of the different varieties, I will describe only those generally cultivated. These are divided into three main classes; the Japanese or Oriental, the Native American and the European.

The Japanese nuts are very large, while the trees are usually small and come into bearing early, but in most localities they are undesirable as they are not very hardy and many crops may be lost through frost. The quality of the nut, furthermore, is inferior.

The Native American or Sweet chestnut, is indigenous to most of the States east of the Mississippi River. Although it is slow in development and comes into bearing late, when matured it makes one of the finest shade trees known. When crossed with the European sorts, this type has produced some of the best of the named varieties.

The Europeans (commonly called Italian, Spanish and French or French Marron) all are of the same origin. The color "maroon" comes from the word Marron (chestnut color).

The European variety can be distinguished from the American Sweet or its hybrids by the small amount of fuzz about the point. The amount on the American Sweets is much greater, sometimes nearly covering the nut. The European sorts usually are of good size, some of the named varieties being very large. Some are of very good quality, but their value is in their size and fine, glossy appearance. They bloom late in the spring (last of May to early in June) so that they are practically a sure crop in frosty districts.

They bear heavily and regularly, form a handsome tree and from the growers' and market viewpoint, are unequaled. The only disadvantage of the European type, however, is that the skin is astringent, but since most of them are cooked before eating, the skin is removed readily; in fact, it should not be eaten, as it is indigestible.

When the European is crossed with the American sweet this difficulty is modified or eliminated. Of the named varieties most generally cultivated I give herewith a brief description:

Marron Combale—Nut, very large, round, medium brown; wood, yellowish; leaves, brown, narrow and glossy. Very productive. Origin, France.

Marron Nousillard—Nut, very large, flat, light brown; wood, reddish brown; leaves, wide and glossy. Buds have a sort of "shoulder." Productive and precocious. Origin, France.

Marron Quercy—Nut, medium to large, round, dark rich brown, glossy and handsome, good quality, good bearer, usually one nut in a burr. Wood ashy; leaves, brown, very large, but not very glossy. Precocious. Origin, France.

Numbo—Nut, medium-large, roundish, medium light brown, quality fair; tree, vigorous and heavy, regular bearer. Origin, doubtful, probably European.

Paragon sun. Sober Paragon—Nut, fair size, roundish, of only fair quality, rather starchy, a good bearer. Origin, Germantown, Pa., from seed of Spanish type.

Ridgely—Nut, fair size, two or three to the burr, flavor good; tree, vigorous and productive, European type. Origin, Dover, Delaware.

Rochester—Nut, fair size, quality very good, a good bearer. (Any of the above would sell for Italian or Spanish and the very large ones for French Marrons).

[In the third and concluding article, Mr. Parsons will discuss such subjects as planting, grafting, budding, irrigation and pollination of the different varieties of chestnuts.—Editor.]

Carnations From Seed

I HAVE been unsuccessful in raising the largest carnations from seed. What is wrong? How can I get large ones similar to the Enchantress?—Mrs. J. W., Walport, Ore.

Raising carnations from seed is seldom practiced except when new types are being bred and the largest carnations are not obtained from seedlings. I advise the use of cuttings if it is possible for you to obtain the variety which you wish. However, if it is impossible to get the cuttings, purchase young plants from a reliable seed house or nursery, selecting the named varieties from guaranteed stock. The Enchantress is listed in most of the catalogs of California seed houses.—H. T.

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ONLY the best paint can give you satisfactory service. It spreads easily—saving labor cost. It covers more area per gallon than "cheap" paint. Two worth while savings.

But more than that, it lasts many years longer than "cheap" paint and prevents depreciation, saves repairs, and enhances values.

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We use PIONEER WHITE LEAD which is super-purified and ground so fine that it will pass through a silk screen which has 40,000 meshes to the square inch.

All other materials—pure linseed oil, pure zinc and pure colors—are of the same high quality—the quality which is essential to the making of best paints.

The use of Fuller's Paints whenever your buildings and equipment need them—without delay—assures the lowest paint cost we know.

House Paint: Fuller's Pure Prepared Paint, Phoenix Pure Paint, for painting houses. The purest, best protective and most durable paint manufactured —32 colors.

Barn and Roof Paint: A protective coating for barns, roofs, fences. Dries with a good gloss and wears. Economical in cost and dependable in quality —6 colors.

Floor Paint: Fuller's Rubber Cement Floor Paint—a sanitary, waterproof and durable paint for floors of kitchens, closets, etc. Attractive in color and gloss. Dries hard over night—12 colors.

Implement Paints: Fuller's Pacific Wagon Paint, adapted for repainting agricultural implements, farm wagons, farm machinery, wind mills. A glossy, durable finish—7 colors.

Also makers of Fullerwear, the all-purpose Varnish, Silkenwhite Enamel, Fifteen-for-Floors Varnish, Decoret, Washable Wall Finish, Auto Enamel, Fuller's Hot Water Wall Finish (kalsomine), Porch and Step Paint, Silo Paint, Milk Can Enamel, PIONEER WHITE LEAD, Tractor Paint, and Fuller's Oil Stains.

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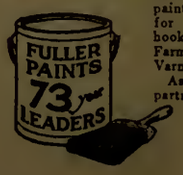

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—24-inch Discs

Equipped With Automatic Hitch and Powerful Power Lift Attachments—of Light Draft—With Great Clearance—Absolutely No Clogging.

Extra large dust proof bearings. Adjustable beams to cut 6, 8 or 10-inch furrows. Sub-soilers to break the plow pan.

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3 DISCS—1875 LBS. ORIGINAL PRICE, $440.00; REDUCED PRICE, $127.00

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TEXAS OIL BULLETIN
1023 Waggoner Bldg. Fort Worth, Texas.

Timely Tractor Tracts

Walter H. Gardner

A "Stirring Sight" Indeed is the view of a powerful tractor and sub-soiler at work. Up in Solano County a "60" track layer now is pulling a heavy 3-point sub-soiler in 200 acres of virgin tule land—"land that ain't never even flirted with a plow!" Here is a wild tangle of willow roots that will be uprooted to a depth of 24 inches. The points of the sub-soiler are gauged 18 inches apart. Those roots either will come up on the spot, or be blown out by dynamite.

Walter H. Gardner

Another Sub-soiler in the same county is fitted with a "gopher," which is dropped into a drainage ditch and started toward the center of the field. Sometimes this single standard goes 30 inches below the surface! How thoroughly that field will drain when the work is completed!

And Now They're Planting With a Sub-soiler! On the Mangles Ranch, at Cordelia, there were 200 acres of vineyard to be planted. Behind a "75" caterpillar was hitched a 5-point sub-soiler, going down about 17 inches, and the tractor was started down the line in which the vines were to be planted. Then the same tool was run over the cross-rows, intersecting at the point where the vines were to be set out. That is surely making the most of the last opportunity to loosen the soil at the roots of the young vines. Later the space between rows will be treated similarly.

Chadbourne Bros., with an oversize 20-35 "ball-tread" also are thoroughly sub-soiling a 50-acre tract before setting it out to orchard. And so it goes. Power is the watchword. For this work tries the sturdy heart of tractor and implement.

Grandmother Bascom Must Have Foreseen the sub-soiler when she said, "Some people seem to think plowin' ground is like mixin' pie-crust—they don't do no more'n they can help. But the Bascoms allers looked on it like beatin' cake-batter—the more stirrin' and the more turnin' over, why, the better the results!" And we never learned the real worth of this homely simile until last summer in camp. There we discovered the deathless and absorbing truth that the sensitive nature of a properly crisp crust is toughened by more than the faintest of chaste caresses! And it's true—some people do plow that way!

The Supervisors of a County in Northern California some years ago were in the market for tractors for road work. They called for bids and bought largely on price—bought four "farm tractors" of a reputable make. But they were machines that were practically unknown to the ranchers of the community. Nor were these tractors especially fitted for road work. After intermittent use for about two years, all but one of them were driven into a corner and forgotten. We wonder if the same costly error would be repeated today? Would the tax-paying farmers of the county be content that their own experience with tractors should be ignored? Would the present supervisors buy a machine just because it was cheap? Would they invest in a tractor that wasn't especially suited for the arduous task of road-building and maintenance? We think not!

How Much Will Your Tractor Haul on a Grade? Most persons fail to realize the tremendous handicap under which a hauling machine labors when pulling up a grade. Gravity is a mighty force to overcome—a far greater resistance than simple road friction. Here's a little table for your use. It is based on work where road is reasonably good—not paved, but hard earth. On such a footing it takes a draw-bar pull of 224 pounds to move one ton.

Load in Pounds That the Average Tractor Can Pull Per 1000 Lbs. of Effective Draw-bar Pull:

GRADE	
Level	9000 lbs.
5 per cent	5600 lbs.
10 per cent	3500 lbs.
15 per cent	2800 lbs.
20 per cent	2020 lbs.
25 per cent	1520 lbs.
30 per cent	1110 lbs.
35 per cent	830 lbs.
40 per cent	590 lbs.
45 per cent	400 lbs.
50 per cent	240 lbs.

The Quality of the Road-bed affects the useful work that can be done. Careful tests have shown that on a sandy road it takes 448 pounds of pull per ton of weight to move a wagon—and on a smooth, hard asphalt road-bed, only 17 pounds! Think of it! Twenty-six times as much effort to move a wagon in sand as on the highway! Verily, good roads save power as well as time and profanity!

Gratifying Decreases in Tractor Prices! Recently the costs of many farm machines and implements have been reduced to pre-war prices. And it surely has been a tough furrow for the tractor manufacturer! Only drastic economies and the opening of new commercial markets far afield from farming, such as road-building, hauling, lumbering, and snow-removal, have kept the worth-while machine on the market. And the others, if you notice, have mostly disappeared. But the tide has turned. Business is increasing. The rancher now may invest in farm power equipment with an assurance that he is getting good material and refined design—and all at a reasonable price!

An Interesting New Tractor Development

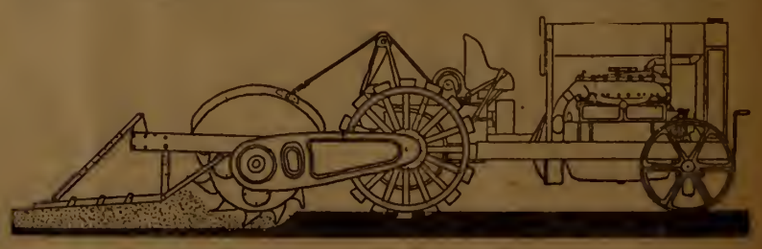
THIS "rotary plow," a combined tractor and tillage tool, has attracted much attention during recent demonstrations in Oregon, Washington and Northern and Central California.

It is said to pulverize the soil and prepare an ideal seed-bed in one operation. Furthermore, it may be used to draw a drill or seeder at the same time.

The shares revolve at high speed, throwing the dirt out behind, and leaving a fine mulch to a depth of 10 or 12 inches.

A sample machine, of finished design having been completed, the inventors purpose to conduct demonstrations this summer in the great wheat fields of the Dakotas. Describing this interesting device, the Rotary Plow Co., of Seattle, who plan to manufacture and distribute the machines, give the following information.

"The capacity is about 15 acres per day where the ground is exceedingly hard, but on ordinary ground the machine will till and seed 23 acres in a



10-hour shift. The 'cut' is 68 inches wide.

"We also plan to turn out a 'baby' rotary plow that will meet the needs of the small farmer with 10 acres of ground. This machine also will till the ground to 12 inches in depth."

Application of Land Plaster to Legumes

APPLICATION of land-plaster to legumes may or may not be profitable. It all depends upon the farmer.

One spring F. M. Roseman, in western Oregon, began sowing land-plaster on a field of red clover. Before the field was finished it commenced to rain and enough water fell to dissolve all the material that had been applied.

After the rain, the material was sown on the remaining portion, and although there were subsequent showers, the amount falling was insufficient to wash the powder into the soil. Consequently this later application was almost a total loss of material, time and energy so far as that year was concerned.

Land-plaster, not being a plant food in itself but merely an agent for rendering more available to use plant food already in the soil, depends for its effects upon being dissolved and brought into contact with soil materials.

Its value, when sown at the right time, was strikingly apparent in the field mentioned above. Clover in that part which received attention first was more vigorous in growth. Stems and leaves were more substantial, the plants attained a greater height and the harvest of hay was considerably larger than on that portion which received the later application. Sowing too early has been found just as bad as sowing too late. Under these circumstances much rain dissolves all the material, washes it into the soil and then leaches it out again before it has opportunity to complete its work.

Regularity of application with as much speed as possible are the goals striven for. They are secured in the highest degree with a land-plaster seeder, but Mr. Roseman did not have one; however, he devised a scheme which gave practically the same results. Two-inch planks were used to lay a bed on a low-wheeled wagon truck. Sacks of the material were loaded, and a small box at each end provided seats for the driver and the man that sowed.

In use, the wagon was driven slowly, back and forth across the field. The operator sat facing the rear and threw the substance by hand from a tub before him. Both hands were used alternately and in this way a strip of ground was covered, extending in width from about five or six feet out on one side of the wagon to an equal distance out on the other.

This arrangement enabled Mr. Roseman to secure a uniform distribution and the work was finished a great deal quicker and with far less fatigue than necessitated by the old method of walking and carrying.—A. Claudus Krittur.

One Was Sufficient

A Dutch pastor makes it a point to welcome any strangers cordially, and one evening after the completion of the service he hurried down the aisle to station himself at the door.

A Swedish girl was one of the strangers in the congregation. She was employed as a domestic in one of the fashionable homes, and the minister, noting that she was a stranger, stretched out his hand.

He welcomed her to the church and expressed the hope that she would be a regular attendant. Finally he said that if she would be at home some evening during the week he would call.

"Tank you," she murmured bashfully. "But Ay have a fella."—Atlanta Journal.

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Cletrac

Reg. U.S. Pat. Off.

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2. Plows 6 to 8 acres a day using any 2-bottom 12-inch plow.
3. Every part subject to wear constructed of chrome steel—weighs only 1820 lbs.
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5. Simple, care-free design—burns kerosene, distillate or gasoline.
6. Every working part quickly accessible.
7. Unprecedented value at $875 complete.

Model "F" Cletrac is made in four sizes: 31 inches wide, with 8 inch clearance; 41 inches wide, with either 8, 14, or 18 inch clearance.

Unbeatable for Orchard work.

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Cletrac F does all your orchard plowing and cultivating, using the tools that you have on hand at present. It is low set and compact—works right up close to the trees without scraping bark or branches. Its remarkable short-turn ability allows it to swing from one row into the next with a single twist of the wheel. In addition—Cletrac F does all the regular farm jobs outside the orchard, including row-crop cultivation.

Its capacity for work is enormous—plows 6 to 8 acres a day—discs 15 to 20—harrows 20 to 25—and withal it is so simple, care-free and accessible. Equipped with a sturdy, powerful 4-cylinder kerosene, distillate or gasoline burning motor.

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Weighs less—costs less. Greater power, speed, strength. A few pounds pull on the lever means tons on the stump. You can pull big stumps alone—quick, easy, cheap—with not extra help. 80-page illustrated book—Land Clearers' Guide—free. Tells best clearing methods under all conditions. Low prices to demonstrators on one-man and horse-power pullers. Write today

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Germain's PANAMA Rhubarb!

-3 foot stalks!
-enormous yields!
-year-round producer!
-frost won't hurt it!
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BIG MONEY will be made with Germain's PANAMA Rhubarb. The world is its market, for it is as good a shipper as the orange. Why not be among the first to reap this harvest of dollars. Write TODAY for complete information.

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Three carloads of rhubarb were shipped East—one of Germain's PANAMA, one of Giant Crimson and one ordinary. Germain's PANAMA brought $3.50 a box and an order for another carload to be shipped express collect. Giant Crimson brought $2.25 a box, and ordinary $1.25 a box.

A field planted to Germain's PANAMA last June produced 20 tons to the acre in January and brought $500 an acre. Same field netted $500 an acre after recent frost, and six weeks later produced another crop.

We've introduced many agricultural wonders in our 50 years' history—but none that excels Germain's PANAMA Rhubarb. It far outclasses all other rhubarbs in size, flavor, color, texture, quality, tonnage and marketability.

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Have been using 3 of your Double Catch Gopher Traps and now lack only a few of having caught 100 gophers. Enclose check for 6 more traps.—W. T. H.

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"You haven't read the magazine until you've read the ads."

Spring Topics for Citrus Growers

By V. F. Blanchard

The Cover Crop

THE winter dormant period for citrus trees is over and growers now are considering or beginning spring work. A large percentage of groves have gone through the winter with the soil covered with green manure crops. Unfortunately, the season was not favorable to the growth of cover crops, especially clovers, and but few groves have a large tonnage of green material to turn under.

The writer has seen some excellent fields of purple vetch cover crops and the indications seem to be that the purple vetch has outgrown other cover crops when planted under like conditions.

WHEN TO TURN UNDER

Judging from past experience, when there is only a small growth of green material, there is a temptation to let it grow until late in the spring, in order to produce a greater tonnage. The experiences of the best growers and investigators show that such a procedure does not give the best results. The extra green material produced is obtained at the expense of the best tree response during the season when the energies of the citrus should be confined to the setting and holding of the next season's crop. It is far better to turn under the cover crop before the middle of March, or at least not later than the latter part of March.

The advantages from early turning under of green manures are as follows: There is less disturbance to the root system of trees, for they are more dormant then; it permits deeper turning under, thus enabling a greater percentage of organic matter and nitrogen to be saved and utilized; nitrogen which is contained in the green manure becomes available in time for the spring growth; and fibrous roots are pruned off and new roots are stimulated which are in a better condition for plant food assimilation when spring growth starts.

THE REASONS WHY

The disadvantages of late turning under are as follows: There is danger of disturbing the root system if the cover crop is turned under deep enough to obtain the greatest benefit from it; shallow work plowing which is necessary for late turning under, permits the burning up of the organic matter and loss of nitrogen by exposure; and plant food becomes tied up in the green manure at just the time it is needed by the trees. Early turning under is undoubtedly the best practice.

Good Care Essential for Recovery

ONCE again the citrus groves of California have been visited by a severe frost. To one who has grown up in the citrus business and whose main interests are with citrus growers it has been a sad sight to behold. But the most unfortunate part of it all is that there are many growers who have been attempting to get their places clear of debt and who have received a great setback.

One question has occurred to every grower: What is the most economical and practical method of bringing the grove back to a state of productivity? It is a question which every grower should attempt to answer for himself, for the success of his future efforts will depend largely upon how well his plans are made and carried out.

LESSONS FROM PAST

The results of past freezes have brought forth certain principles that can be utilized at this time. The best practices are available to be utilized in getting the injured grove back to productivity. It might be that under certain conditions the grove can be saved by certain treatment; again, the trees may be injured to such an extent that they will always be weak and should be pulled out. Those, among numerous questions, should be determined by the individual grower.

There is frequently a tendency, when a disaster has occurred, to slacken up the work. This should not be the case, for one's efforts count much more when conditions are adverse. In traveling about among citrus growers one cannot fail to be impressed by the spirit of optimism and bravery with which they are facing the situation. The indications are that every effort possible will be made to regain what has been lost.

Citrus Nursery Trees Scarce

MANY inquiries have come to the office of the Agricultural Extension Service for Los Angeles County concerning possible sources for citrus nursery trees. It is evident from such inquiries and from observations made in the field that the recent freeze has played havoc with citrus nurseries. Few nurseries were protected with heaters and many of them were in the regions of most severe injury. The writer has seen a number which were frozen to the bud unions and to the ground. Unfortunately the regions where less frost injury was experienced contain but few nursery trees.

YOUNG TREES SCARCE

It is evident that growers desiring to replace frozen trees will experience great difficulty in obtaining resets. There will perhaps be a temptation to accept trees not up to standard. The writer had some experience after the freeze of 1913 in planting out trees whose trunks were slightly cracked by the freeze.

It was determined later that it would have been much more preferable to have waited another year or two for good trees, for many of them had to be pulled out. Growers should be certain that the trees they buy are of good quality. A poor nursery tree makes a poor tree in the field.

Effect of Frost on Scale Insects

MANY growers have inquired at the office of the Agricultural Extension Service and of its staff members in the field regarding the effect of the recent freeze on scale insects.

It is quite evident that many of them were slaughtered when the leaves and branches died, but those which were protected by foliage that was not injured are very much alive. It is quite probable that fumigation will be a necessity as usual. However, those groves which were injured to the extent that branches died and leaves all dropped, might possibly be able to miss a fumigation. The situation can be judged more accurately a little later. It is a long time before the next fumigation season!

Spring Fertilization

THE severe freeze which visited the citrus districts of California and caused so much damage has upset the normal program for many citrus growers. The methods of procedure as followed and recommended by different growers are so varied that the novice or even a grower of considerable experience would have great difficulty in determining just what to do.

One of the questions confronting growers at this time is in regard to the use of quickly-available nitrogenous fertilizers to assist the trees to recover from the effects of the frost. The recommendations by the Agricultural Extension Service in some instances were misunderstood. These recommendations (as gleaned from a survey made by the Citrus Experiment Station following the 1913 freeze and the observations of practical citrus growers) were to the effect that citrus trees severely injured by frost would NOT be benefited by the use of quickly-available nitrogenous fertilizers; in fact, that growers would be throwing their money away by applying such material at this time.

TO FERTILIZE OR NOT?

A number of growers have asked the

writer to advise them in regard to the advisability of eliminating the nitrogen fertilizer this spring. In some instances the trees were found to be only partially hurt by frost, a large number of leaves remaining. In the latter instance, the grower should proceed just as if the trees had not been injured by frost, and use the nitrogen fertilizer, for as long as there are many leaves on the trees, the nitrogen can be utilized to good advantage.

It may be impractical however, to use the nitrogen fertilizer when the trees have been so severely injured that most of the leaves have dropped. In that case, nitrogen cannot be assimilated in any appreciable quantity until new leaves are grown. Since it takes a long while to grow a new set of leaves, there is the likelihood that nitrogen added to such trees will be lost.

Experience has shown that spring fertilization, using nitrogen in a quickly-available form, pays by assisting to set a crop of citrus fruit and preventing the June drop. Growers who are obtaining the most consistent crops year after year are those using nitrogenous fertilizers in generous amounts during the spring months.

This particularly applies to oranges but lemons also are benefited by its use when applied at various times over a greater period. The mistake has been made of relying too much upon quickly-available nitrogen fertilizers and not using cover crops and manures, or only a small amount of the latter. The quickly-available nitrogen fertilizer should be used only as a supplementary fertilizer to meet the needs of the tree during the period of greatest necessity.

There are a number of available sources of nitrogen for the spring treatment. Just which one to use should be determined by comparative prices. It is difficult to determine what is the most economical amount to use for best results. Under average conditions, many growers are using a pound or more of nitrogen per full bearing tree; dividing it for applying at two different times.

SOURCES OF SUPPLY

Taking ammonium sulfate and cotton seed meal as examples: Ammonium sulfate has 20 per cent nitrogen; therefore it would require 5 pounds of ammonium sulfate to produce a pound of nitrogen. Cotton seed meal has about 6 to 6½ per cent nitrogen; therefore about 18 pounds of this material would produce a pound of nitrogen. The following table was prepared by the Agricultural Chemistry Division of the College of Agriculture, Berkeley, and shows comparative analyses:

PERCENTAGE RANGE OF NITROGEN

	Nitrogen
Nitrate of soda	15-16 %
Sulfate of ammonia	20-20½ %
Dry blood	12-13 %
Tankage	6-10 %
Fish scrap	8-11 %
Bone meal, raw	3- 4 %
Bone meal, steamed	3- 3½ %
Peruvian guano	6-10 %

Geo. P. Weldon on Grape Prospects

(Continued From Page 8)

tion seems to exist. The most optimistic will console themselves with the fact that grapes of all kinds contain a supply of palatable juice, full of sugar. They can be used for soft drinks as well as wine; they can be used for syrup and perhaps many other products, and therefore it is not yet time to worry until a period of depression arrives.

CONFIDENCE IN FUTURE

Planting goes merrily on. Confidence in the future of the industry is expressed by thousands who are taking a chance. The industry in the future will have its ups and downs as in the past, but those who have stuck during times of discouragement, while their neighbors were pulling vines by the thousands, have won in the long run.

VINES BEAR EARLY

Grape vines come into bearing very quickly and in three years after planting, should produce considerable fruit. This characteristic appeals to most persons, as the average man does not relish a wait of five years or more after planting until commercial production begins.

It is now the general practice (and in the judgment of the writer a good one) to grow some other crop in an orchard from which to derive an income prior to the time when the trees come in bearing.

GRAPES AS AN INTER-CROP

Grapes may be used to advantage in cases of rather wide planting of fruit trees. For example, they work splendidly into a system of intercropping with walnuts, where the trees are planted from 50 to 60 feet apart. Three or four rows of grapes, planted in one direction between the rows of walnuts, will bring in an income four or five years before much can be expected of the walnuts.

In cases where deciduous trees are planted 25 feet apart, there is room for a row of grapes in the middle without interference with cultivation or the growth of trees.

With present high prices, grapes as an intercrop are very profitable, and are worthy of serious consideration when choosing something to bring in some money during that period when the trees are getting a start.—G. P. W.

(Photographs by Inman)

Effective Protection for Young Grapevines

In a section of San Bernardino County, where winds are severe and the sandy soil blows, grape growers have adopted this method of protecting growing vines. Two light boards are pushed into the ground to windward of each plant, and vine and boards are tied with cord.

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WIZARD 4-PULL TRACTOR

DEPENDABILITY

DURABILITY

The Wizard 4-Pull is the only tractor having a rigid 4-wheel drive. This delivery of power to all 4 wheels gives the Wizard all the traction of a track machine—and under some conditions more—but without prohibitive upkeep costs of track tractors.

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After delivering normal pull, the Wizard 4-Pull has 35% reserve power. It is built with overstrong parts throughout to support maximum performance.

There isn't a single oil or grease cup on the Wizard—the only tractor that is automatically oiled throughout. A great time saver. Every working parte xcept wheels and fan is inclosed and absolutely protected against dust and dirt.

The Wizard is the result of 30 years of experience and development by practical tractor men. It is a perfect tractor.

Keep these two points clearly in mind:

(1) The tremendous traction of the Wizard.

(2) Its unequaled durability and low upkeep cost.

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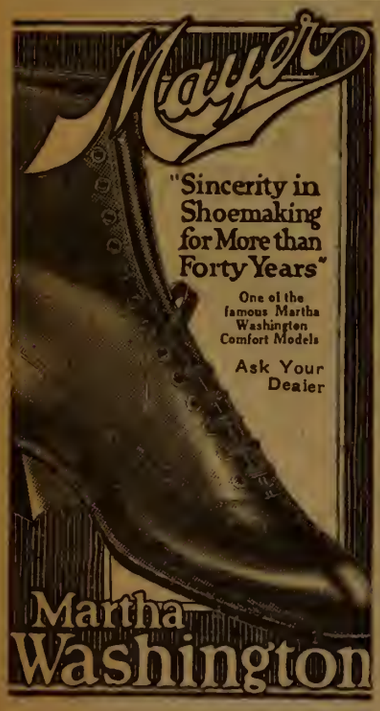

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The glands used in the manufacture of "Nu Life Gland Tablets" are carefully selected from young, healthy, vigorous animals, under United States Government Inspection.

If you have had the misfortune of being deceived by attractive advertisements of worthless and often dangerous quack medicines, do not be discouraged, for "Nu Life Gland Tablets" are absolutely guaranteed to give satisfactory results, not only in restoring your lost health, strength, and vigor, but also to act as a general tonic for the entire system, enrich the blood, increase your weight, build firm flesh, and to correct anaemic conditions.

Send for free pamphlet, "Nu Life Gland Tablets" are not for sale in drug stores. For sale only by the Stanton Laboratories, 279 5th Avenue, San Francisco. $3.00 per bottle. Sent postpaid on receipt of postal or express money order, registered letter or your check is good.

Orders and literature sent under plain cover, which do not indicate nature of contents.

Wonderful Opportunities are Described on Pages 30 and 31.

The Cause of White Diarrhea

White Diarrhea is caused by the bacillus Bacterium Pullorum transmitted through the yolk. There is scarcely a hatch without some infected chicks. The germs multiply very rapidly and one infected chick may infect the entire brood. The germs can be killed by the use of preventives. Intestinal Antiseptics to kill the germs should be given as soon as the chicks are out of the shell. It is much easier to prevent than it is to cure.

How to Prevent White Diarrhea

Dear Sir: Last Spring my first incubator chicks when but a few days old began to die by the dozens with White Diarrhea. I tried different remedies and was about discouraged. Finally, I sent 50c to the Walker Remedy Co., Dept. 483, Waterloo, Ia., for a box of their Walko White Diarrhea Remedy. It's just the only thing for this terrible disease. We never lost a single chick after the first dose. We raised 700 thrifty, healthy chicks, where before we never raised more than 100 a year. I'd be glad indeed to have others know of this wonderful remedy. Ethel Rhoades, Shenandoah, Ia.

Don't Wait

Don't wait until White Diarrhea gets half or two-thirds your chicks. Don't let it get started. Be prepared. Write today. Let us prove to you that Walko will prevent White Diarrhea. Send 50c for box on our guarantee—money back if not satisfied. Walker Remedy Co., Dept. 483, Waterloo, Ia.

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Blue Flame Valveless Oil Hover
So good you can write your own guarantee. 500-chick, 54-in. Hover $25.00

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A free bulletin giving essential points to consider by
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614 Mills Bldg., San Francisco
"Nothing to sell but SERVICE"

Seasonable Suggestions

By Bert Kay

CONTRIBUTING POULTRY EDITOR OF ORCHARD AND FARM

Something We Poultrymen Must Do

IN TALKING to me today, my neighbor, Nelson, said (not without some pride), that it was all he and his wife could do to take care of 7000 chickens, but it was becoming a burden.

"Well," I said, "why don't you get rid of at least half of them, which would save the strength of your wife and yourself. Also, you would have some time for recreation, instead of being a regular slave to the chickens!"

"Instead of having to feed 7000 hens," I said, "why not just split that number in two? It's hard enough to take care of even half that many, as I know by actual experience; mine number close to 4000 at the present. Cut them down to half and make each hen double her production, and what you gain in increased production will more than make up for those you cull out."

DOES SOME FIGURING

"How shall I do that?" asked Nelson. (Nelson, by the way is an old Spanish War Veteran. We served in the affair together—he in the Nebraska and I in the North Dakota regiment.)

"That's easily answered," said I. "All you have got to do is to get hens that will deliver the goods. Of course it is more easily said than done. Why should you, why should I, or any other poultryman, break our backs on stock that will only lay an average of 150 eggs per year when we could get those that will lay 200 eggs per year and even up to 300 eggs? Of course, I know it is almost an impossibility to get 4000 hens that will lay an average of 300 eggs per year per hen.

A LESSON LEARNED

"But I do know this, Nelson, (and it's taken me at least 15 years to learn it), that it is just as easy to feed 3000 hens that lay an average of 250 eggs a year, per hen, as 6000 hens that lay an average of only 125 or 130 eggs per hen per year!

"Why, in other words, should you, or I, feed the boarders or drones that must be among those 6000, that are not earning their keep, when they just as well could be culled out? Or why should you feed 7000 hens when it costs only half as much to feed half as many, and everything else costs less in proportion; when there might be less cleaning, worry, mortality, care, responsibility, doctor bills, and (most important of all) time.

"Figure it out neighbor! Supposing it now costs you, say, about three dollars ($3) per bird per year to keep a hen. That would be for 7000 birds, $21,000. And say your income last year, for example, was 40c a dozen at 125 eggs per hen, or $4.16 per hen income per year. That would be a total of $29,160 for the year, which should leave a gross profit of $8,240.

"ONE MUST EAT"

"That is, you would be so much ahead if you didn't have to eat and have some of the pleasures this life affords, and pay your taxes and insurance and other expenses. Then you have an auto, and a truck for hauling your eggs and feed. Of course, you know better than I how much it costs to maintain them. You should put in the bank at least $5000 or $4000 any way.

"Now suppose, instead," I continued, "you have a flock of only 3500 hens and it costs the same amount per hen per year to keep them—say $3, or a total of $10,500 a year. Suppose that, instead of only 125 eggs per hen per year, they averaged 200 eggs? At 40 cents a dozen, that would be an average of $6.40 per hen per year.

"Now figure it out for yourself. That makes a total of $22,400 a year. With that $10,500 upkeep it appears, after you have deducted that amount, you would still have $11,900.

AND THE RESULT?

"With all your expenses for necessities and luxuries, there remains about the same amount or more to put in the bank as you now have with 7000 hens, and naturally you would have less worry and more time, could take a vacation, pay a man to take care of your place while you are away, and still make more profit than at the present rate.

"Now," I confessed, "I don't get 200 eggs average per hen, but I tell you Nelson, that you can do it, and so can I, if we make up our minds to throw out all the culls and replace them with good registered stock. It is never too late to start. I'm off right now."

And that's why I think that with the experiment station, the registering of all flocks, cockerel sales, accredited hatcheries, and the egg laying contests in Petaluma, the industry will go ahead by leaps and bounds.

Partial View of a Petaluma Farm Carrying 47,000 Hens

A New Industry—Cavies for Meat

ONE of the wonders of the pet-stock and poultry world has been the profit made by many breeders of the cavy or guinea pig.

Now a new angle of the business is attracting much attention—the raising of these little animals for meat. The result has been development of larger strains, producing individuals weighing from 2½ to 3 pounds.

Heretofore tens of thousands of cavies have been used for laboratory purposes, but this demand on the Pacific Coast is limited by the comparatively small quantities of serums and vaccines manufactured here. This situation has suggested the development of a new outlet.

Individual breeders, as well as associations, therefore, are devoting much attention to the education of the public concerning the wholesomeness and food value of "pork cavy."

Epicures assert a roast young cavy is comparable in flavor and tenderness to young pig, with the added attraction of a slight "gamey" flavor.

One breeder of twenty years' experience, M. S. Genor of 5551 Sunset Boulevard, Los Angeles, is installing a "plant" with a capacity of 1000 breeding animals, and looks to the meat demand as the principal outlet for his production. Cavy meat is being served at many leading hotels, cafes and clubs.

Helpful Hints About Chickens

That First Cockerel Sale

HAVE you heard of it? This is another step that will do much toward improving the stock on the Pacific Coast—that is if we have more of them.

Along with other valuable demonstrations "put over" in this part of the State, Petaluma recently finished one of the most unique affairs ever attempted in the utility poultry world.

The Sonoma County Farm Bureau conducted a sale of purebred White Leghorn cockerels, the first sale of its kind ever held. In all there were 40 entries of the finest stock on the Pacific Coast.

Much has been said of the efforts of poultrymen to improve their breeds in other ways than simply making them lay more by forced feeding and the lighting system. But it was left to a few determined men of this district, co-operating with the poultry department of the Farm Bureau, to bring it about.

Many of the poultrymen scoffed at the idea and said it couldn't be done. But they did it and now the sale is being heralded all over the United States as one of the best moves ever adopted by poultrymen anywhere.

The holding of the sale brought out all those who doubted and thought there would be little interest manifested. But the men that took the initiative surely have had their reward in the results of the sale.

The prices received in some cases were not as high as they should have been, but in some cases they exceeded expectations.

The lowest price paid for a cockerel was $10, while the highest price, much to the astonishment of many was $162.50.

Birds were sent and sold from Corvallis and Umatilla, Oregon; Hollywood, Washington; Inglewood, Sebastopol, Petaluma, Santa Cruz and Sonoma, California.

OLD THEORIES SCRAPPED

(1) Is green feed for poultry unnecessary?
(2) Are laying hens better off without yard space?
(3) Is the use of grit in the poultry yard superfluous?
(4) Can the moult be so controlled as to sustain egg-production?
(5) Is the "Hogan" system a fallacy?
(6) Is line-breeding necessary?
(7) Has the White Leghorn lost its reputation to the dual-purpose breeds?

These questions are answered in a startling manner by V. O. Hansen. Whether other poultrymen agree with him or not, it's a "cinch" his assertions will start some arguments! Watch for his article in the May number.

Local Conditions in Brief

IT LOOKS as though our poultrymen are going to have another good year, and in spite of the many warnings that eggs will be lower later on, poultrymen are buying more young stock than last year.

The hatcherymen report very few cancellations and look for a record sale season, even against the promise of low prices for eggs.

"It is noticed, however," said the Chamber of Commerce Employment Bureau for the poultrymen, "that there are less jobs for those asking for them this season, than at the same time a year ago. Whether this is because many of the poultrymen fear the promise of low prices for eggs, or whether it is because the lack of warm rains thus far is postponing preparations for spring laying is unknown. Nevertheless, more eggs are being shipped than this time last year.

Official reports state that Petaluma shipped last year 26,054,365 dozens of eggs, as against 22,223,923 dozens of eggs in 1920, and that last year (1921) 4[illegible]7,8[illegible]9 dozens of poultry were shipped out as against 240,041 dozens [illegible].

The last means that there were as many shipped out, almost, as there are in the Petaluma district and still there seem to be more chickens on the farms this season than a year ago.

New Poultry Registering Association

ANOTHER forward step was taken by our poultrymen in the registering of the flocks, which was decided upon at a meeting of the Poultry Department of the Farm Bureau at the offices of the local Chamber of Commerce. And as a result there was organized the "Sonoma County Poultry Registration Association" of the farm bureau.

The objects of the association are to encourage the breeding of better poultry by trapnesting, indelible marking and the recording of high-producing purebred fowls and to link more closely the other activities.

METHOD OF MANAGEMENT

The new project is controlled by and under the jurisdiction of the Sonoma County Farm Bureau Poultry Department and directed by their executive committee. The detailed management will be vested in a Board of Directors, composed of four poultrymen and a secretary-treasurer, all elected by the executive committee annually.

The registration consists of:

SECTION 1—PRIMARY REGISTRY

FEMALES—Purebred hens making a yearly record of 200 eggs or better, in the first laying year,, or 180 eggs or better in the second year.

Class A: Records made in official egg-laying contests.

Class B: Records made on private poultry ranches.

MALES — Purebred males 6 months of age or older in good physical condition and vigorous, without blemishes, whose dams have an authentic record of 200 eggs or better, and sired by a male from a dam having an authentic record of 200 eggs or more.

SECTION 2—ADVANCED REGISTRY

FEMALES—Those with a yearly record of 250 eggs or better.

Class A: Records made in official egg-laying contests.

Class B: Records made on private poultry ranches.

MALES—To include two classes.

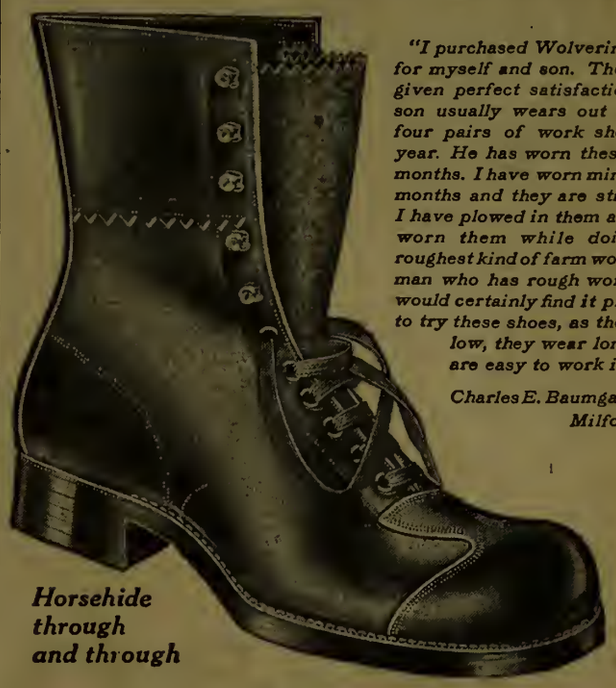
Class A: Registered males that have at least 10 registered daughters.

Class B: Purebred males 6 months of age or older in good physical condition and vigorous, without blemishes, whose dams have an authentic yearly record of 250 eggs or better, and sired by a male from a dam having an authentic yearly record of 250 eggs or better.

(Note—In the May number Mr. Kay will discuss, among other interesting topics: "Egg Grading and Classification," "Raising Broilers," and "Eggs and Prices." Bert Kay writes exclusively for ORCHARD and FARM. Questions and suggestions for articles welcomed from subscribers. — The Editor.)

In trap-nesting keep tab on the hen laying an occasional large or small egg or those producing soft shells. This may help in selecting hens for breeding.

WOLVERINE
The 1000 Mile Shoe



"I purchased Wolverine shoes for myself and son. They have given perfect satisfaction. My son usually wears out at least four pairs of work shoes per year. He has worn these seven months. I have worn mine seven months and they are still good. I have plowed in them and have worn them while doing the roughest kind of farm work. Any man who has rough work to do would certainly find it profitable to try these shoes, as the cost is low, they wear longer and are easy to work in."

Charles E. Baumgartner, Milford, Ind.

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Nursery and Garden Stock—included in the many bargains offered through ORCHARD and FARM'S "Classified Market Place." See pages 30 and 31.

Cost of Dairy Producion

By R. L. Adams

PROFESSOR OF FARM MANAGEMENT, UNIVERSITY OF CALIFORNIA

California Studies of Milk and Butterfat

A GOOD deal of publicity has been given the study now under way by the Division of Farm Management, College of Agriculture, to find out, so far as possible, the cost factors entering into the production of whole milk and butterfat.

Much of the publicity has been based upon statements wholly unauthorized. It seems wise, therefore, to set forth a rather plain explanation of the reason why the study was started and what it was expected can be gained from it.

The work began when a small group of representative dairymen secured an appropriation for the purpose of collecting authentic figures. Later the College of Agriculture was selected to conduct the study, and here the task and responsibility was placed upon the Division of Farm Management.

SIX MONTHS' WORK

Actual work started last September and thus has progressed for a period of six months. After careful consideration of the dairy sections of the State, twenty-four counties were selected in which to conduct the studies, reaching from Humboldt on the north to Imperial on the south, with generous representation in the principal milk and butterfat producing counties of Sacramento and San Joaquin Valleys, coast districts and Southern California. The studies now are based upon 424 dairies.

The work is being carried on by actual record-taking over a year's time at these selected dairies, the selection having been planned with a view to getting a "cross section" of the industry as it now exists. The taking of records is in the hands of men who have been selected for this work and given a thorough insight into the mechanics of record-taking. Three men are giving full time to field work, while twenty-four collaborators are giving part time. In addition, twelve dairymen are reporting directly to the office.

"I can't help smiling when I think of Farmer Jones' cows across the road. They don't even have a manger, much less a clean cement trough. They are tied up with heavy chains, while I have a comfortable stanchion. And say, did you notice the private drinking cup? Some class to that! The boss certainly treats us white, and I for one am going to help him make more money. Gee, this is the life! Who wouldn't smile?"

TO BE ALL-INCLUSIVE

It will be seen that the final results are to be based upon a number of centers of production, each more or less self-contained, with sufficient records to insure the figuring of safe averages. The system of record taking includes two annual inventories taken a year apart, and twelve monthly reports showing changes from one month to the next in the milking "strings," items of cost and amounts of production. The outlook for getting data of value is very bright, as dairymen have shown a keen willingness to place at the investigators' disposal all the information required.

Of course, a good deal of interest centers on the object of all this effort, and what use is to be made of the data when obtained. So far as the University is concerned, its sole function is to collect the facts and to place them in usable shape, but further light is shed on the object of the study by a plain statement by one of the original members who were responsible for getting the appropriation—a member whose interest still continues and whose co-operation is very valuable. He says:

UNJUST ACCUSATION

"In years past the dairymen have been accused by the Legislature, by civic organizations and by the consumers of demanding exorbitant prices for their products. They have been accused of making excessive profits and of getting wealthy at the expense of the health and strength of our growing generation. We have never had accurate data to use in refuting this accusation. We desire now to have data, cost data, the authenticity of which will be beyond question, to show legislators and consumers that we are not asking unjustifiable prices for our products.

TO ESTABLISH FEED VALUES

"We wanted, further, to show both the consumer and producer exactly the cost of producing milk so as to furnish a background, a starting point, upon which to build a stable industry. We realize the vital need of milk to the people; we realize our responsibility, and do not want the milk supply to cease or diminish. In order to protect that milk supply, we want to place dairying on a paying basis, and prevent and remedy the present conditions, under which many men are quitting the business.

"Another purpose was to attempt to establish a means for calculation of feed values. We hope to do this on a basis of the value of our products. The investigation will give figures both in terms of cash costs this current year and in terms of feeds and hours of man and horse labor necessary to produce a gallon of milk or a pound of butter. Having quantity and some equivalents, we can readily calculate the prices we can pay for feeds.

"This survey was started not with the least intention to expose any one or to throw any shadows, but merely to give us, the dairymen, figures we can lay before legislators and consumers which will show them we are not profiteers.

THE REASONS WHY

"These then were the reasons why we asked the California Legislature for an appropriation in 1921. We hope to attain several specific results:

"First—We want to correct the current hypothesis that we are making excessive profits.

"Second—As a result of this corrected hypothesis we will come into a closer and more cordial relation with those who consume our products.

Third—We want to know, community by community, over the entire State, the cost of production so that we can tell what type of dairying is feasible in that community. (By 'type' is meant method of marketing the product, either as market milk, manufacturing milk, butter or cheese.)

"This is a movement started by the dairymen for the benefit of the dairymen and the consumer alike. The information obtained will be placed at the disposal of any one who can make use of it. The success of the investigation depends upon the full co-operation of the dairymen. It is the dairymen's investigation; the men who are doing the work are working for the dairymen; the results will benefit the dairymen. Therefore, let every man get behind the work and do all in his power to make the survey a success and thus do all that any one man can do to help the industry as a whole."

Riverside Dairy Day

A VARIED and interesting program, under the auspices of the Chamber of Commerce of Riverside County, will feature "Dairy Day" at Riverside, Saturday, April 8th.

The object of this event is to emphasize the importance of the dairy industry and to reflect the great strides made in the Southern territory. Various representative organizations will take part and a large attendance of dairymen is expected.

Science Made Simple

By Adam Phule

Article III—The Electric Currant

No more interesting or unusual creation ever has been propagated upon my experiment farm than the vine I have named the Electric Currant. Because of its magnetic qualities the plant itself is very attractive.

Adam Phule

But the fruit—ah! Words fail in describing its deliciousness.

However, let us first consider the unusual origin of this discovery. I had planted some ordinary black currants along a wire fence. The wires, during an electrical storm, became highly charged. Imagine my surprise to note that the electricity, instead of killing the vines, had completely changed their appearance! I was even more shocked than the plants.

"JUICE" HAS EFFECT

The leaves presented all the colors of the rainbow, and the fruit had become extremely juicy, which I presume was due to the terrific charge of juice that had passed along the wires.

But most wonderful of all, because of the electrification of the berries, I found that the harvesting had been greatly simplified.

I discovered, in fact, that it was necessary only to pass a magnetized metal pan under the vines, whereupon there resulted a veritable shower of fruit into the receptacle, the sound resembling that of hail falling upon a tin roof.

LABORATORY EXPERIMENTS

Naturally I determined to guard my secret jealously until I should have emulated Nature in her wonderful transformation of the currants. Therefore I rigged up in my laboratory a similar wire fence, along which I set some young currants in pots. Then I experimented with charges of electricity of varying voltage and strength.

Frankly, I was bitterly disappointed. For, although I succeeded in changing the color of the leaves in some cases, the bushes bore very little fruit. How could I increase the frequency of bearing and the number of clusters on each plant? Finally it dawned upon me that I must use a high frequency charge. Sure enough, at each application, I noticed that the freaks were produced more frequently.

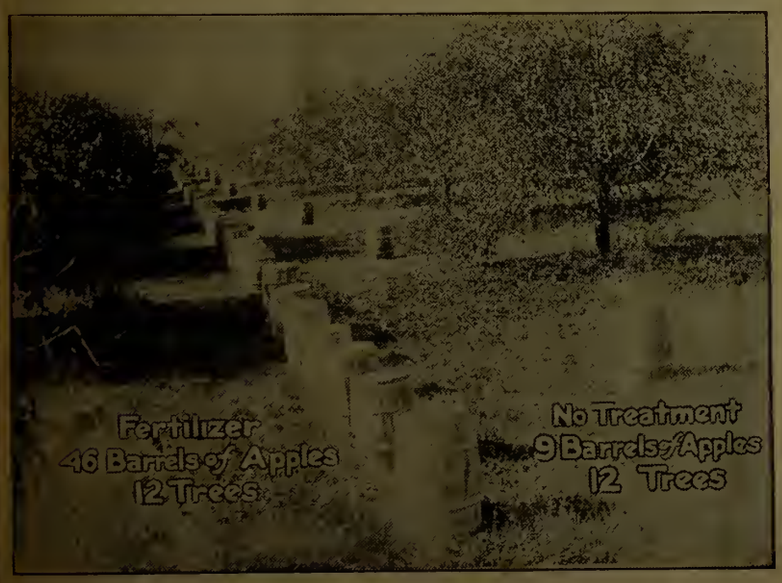
THE ULTIMATE TRIUMPH

Elated with my success, still I did not realize that the greatest triumph was yet to come. It was while attempting to measure the amperage of each vine that I discovered the electrification had become permanent and sufficient power was generated within the plants to operate small electrical devices. Experimenting further, I connected to one vine an electric heater and a fan, through the combined action of which I found it was possible to dehydrate the currants to a nicety while still on the vines, and thus be entirely independent of weather conditions.

Having found just how to apply the charge of electricity, I now can produce electric currants at will. Moreover, I have become so familiar with their appearance at various stages of development that I can tell at a glance the exact volt-age of each vine; that is, the time that has elapsed since the original electrification.

Now, through the process of electrophotomicrography, I hope to make a further study of this interesting branch of plant physiology, which we may properly designate *electrodynamics* ("that branch of physics which treats of electric currents."—Webster).

(Professor Phule has promised to contribute other articles exclusively to ORCHARD and FARM, including a paper on "The Salt and Pepper Tree." Watch for this remarkable treatise from the eminent scientist in an early issue.—Editor)



Does It Pay to Fertilize?
Here is a graphic illustration of the benefits to be derived from the use of commercial fertilizers in the orchard.

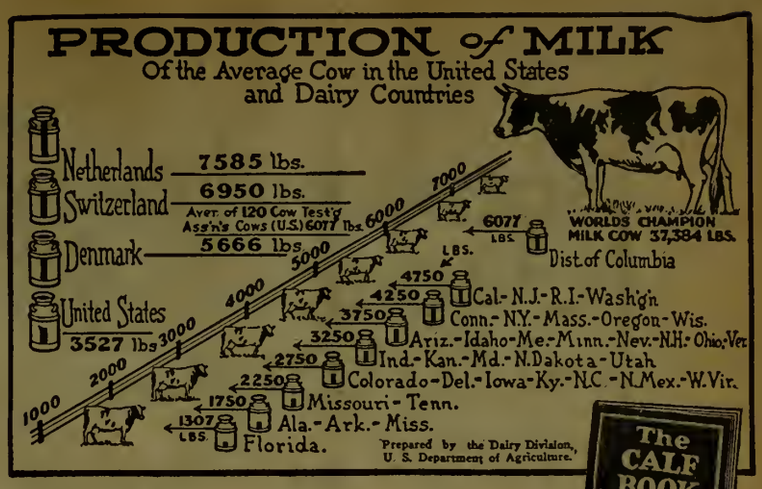
Tractor Studies in the South

(Continued from Page 13)

the replies of the owners of the 2-plow tractors was 63 days, and of the 3-plow machines, 78 days.

Each farmer was also asked for the number of days of belt work per year now done with his tractor which was formerly done with a hired engine. The average of the replies to this question was 13 days. Between 20 and 25 percent, however, stated that they did no belt work with their tractors which were formerly done with hired engines.

Nearly 50 per cent of the men reporting have increased the size of their farms since purchasing their tractors by an average of about 50 acres—from about 210 to 260 acres. At the same time they have decreased their workstock from an average of 6.7 head to 5.1 head. They kept an average of one head of workstock for each 31 acres before they purchased their tractors, and were keeping one head for every 50 acres at the time they made their reports.



Not More Cows—But Better Cows

Compare the average yearly milk production in the United States, of 3,527 lbs. per cow, with that of other countries shown above. You will see at a glance that one of the greatest means of increasing dairy profits is in obtaining better cows.

The cheapest and best way of getting better cows is to raise them. Use a good bull, keep the best calves from your best cows and raise them on De Laval skim-milk, which is a splendid feed when properly fed. In this way you can improve your herd at very little cost.

A De Laval Separator is valued chiefly because it separates cream—a cash crop—better, quicker, cheaper and without waste. But of almost equal importance is the skim-milk it gives, which will replace your present cows with better cows; or as Pren Moore of the University of Idaho says, "when fed to laying hens will bring you as much money as the original butter-fat;" while it is without equal for growing pigs.

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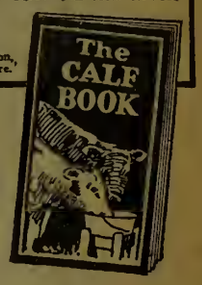

FREE! This little booklet tells you how to raise fine calves on De Laval separated skim-milk. It is simple and practical. Sent free on request to your nearest De Laval office.

The original cream separator. Over 2,500,000 in daily use; about as many as all the rest combined. Has won 1,091 grand and first prizes at every important exposition. Skims cleaner, turns easier and lasts longer than any other. The world's standard. Pays for itself. Sold on easy terms. See your De Laval Agent or write for information.

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Most chickens are weak, bloodless and infertile from worms and parasites. This is what is the matter with most flocks and responsible for most poultry losses. To get thrifty hens and good layers they must be free from worms. A hen in good condition lays twice as many eggs as a hen with worms and parasites and a healthy chicken is worth $1.50 on the market, whereas a dead one in the poultry yard is worth nothing.

As a result of 30 years' experience as a Veterinarian, I recommend the only efficient worm expeller and conditioner to give quick positive results so that you can see the difference for yourself.

I a mso confident that N-&-H will do the work that I will send you a dollar's worth, enough for 100 chickens, without a cent to pay unless after a few days you are well pleased. Pay nothing to me or postman. Pay me a dollar if your hens are rid of worms and become thrifty and healthy.

Send no money—just name today and you will get a dollar package and full directions prepaid. I trust poultry people. Write me today. Dr. E. J. Netherton, N.-&-H. Co., 351 North Seventh street, Kansas City, Kas.

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are grown from seed and bloom freely first season. There is a wonderful collection in a small package of seed. 25 and 50c per pkg. With each 50c order I will send one nice Dahlia bulb free until April 15.
MRS. ANNIE R. WHITE, 207 W. Fesler Street, Santa Maria, Calif.

YOUR GARDEN of FLOWERS

by Helen Temple

Sweet Pea Growing

CALIFORNIA has become famous for its wide variety of sweet peas; in fact, our sweet pea seed is shipped to all parts of the world. For instance, a missionary in India purchased a quantity of sweet peas to plant in the yard of her school. The package was one that had come from a well known seed house in Los Angeles. Since she was a California woman, those little seeds seemed almost like "friends from home." She planted them carefully and followed cultural directions. The results of her care left nothing to be desired. "No one knows," she said, "just how much those flowers meant to me. They seemed to bring back my own State." Of course, we who never have left our native home scarcely can realize how much those flowers meant to the lonely woman.

Helen Temple

Although sweet peas are so widely grown in California, quite often the novice, disregarding the few cultural requirements, or using cheap seed, fails to obtain the best results. A long season of blossoming as well as high quality of flowers depend upon such factors are fresh seed, the proper location, properly drained soil, cultivation after irrigation, and frequent picking.

The selection of varieties should be given due thought. The missionary in India felt grateful that she found a package simply of California sweet peas. We can choose our varieties, however. If we wish to plant a row of sweet peas in the interior, where the sun shines in all its glory, we do not choose the delicate colors, unless shade for the vines is available. Along the coast, however, the delicate shades will prove all that is claimed for them in the floral catalogues.

Location and Soil for Sweet Peas

SWEET peas are one of our "cool" flowers. They should not be planted where they will be exposed to the heat and glare of the sun all day long, especially in the interior or semi-tropical sections. On the coast, however, it is best to plant them where they will be exposed to the sun as much as possible in order to "balance the books" in foggy weather.

On the coast, the winds usually come from the west; therefore, if an open fence is to be used as a support for the vines, they should be planted so that the wind blows the vines against, rather than from, the fence.

In the interior and semi-tropical regions, where there is an abundance of sun, the sweet pea needs protection during part of the day for best results. The early morning sunlight is best for them. The interior heat is most severe from 11 o'clock until 4. If the vines are protected during a part of this time, the crop of flowers will be much heavier and of better quality. If it is impossible to protect the vines from the heat, do not attempt to grow the delicate colors or the fancy varieties. A muslin shade often allows one to grow a beautiful collection of sweet peas even where the sun shines most intensely.

PREPARATION OF SOIL

The soil should be well drained. Adobe and heavy clay should be given a heavy application of well-rotted manure, lime and sand. Spade or plow as deeply as possible (two feet is not too much). The light, loamy soils do not need so much preparation. Manure or compost improves the soil, but is not necessary if it is comparatively rich. The lighter soils should be worked up to a depth of a foot when planting sweet peas. This deep working of the soil gives the roots a chance to go down into the cool undersoil. If they are sown in a shallow trench with a hard soil, and given only an inch or two of loose earth in which to grow, failure of the roots to reach the necessary depth will result in inferior blooms and scraggly foliage.

Planting and Care

WEET peas may be planted from September until April inclusive in the semi-tropical regions. In the interior, planting in September often gives the young plants a chance for fair growth before the frosts. If the winter is mild often they will furnish a few blooms at Christmas time. In the event of frost, the vines do not die entirely and will bloom during the first warm spring days. It is best, however, to plant sweet peas in the interior in March. They will grow rapidly and bloom more profusely than those planted in the fall. On the coast, if they are planted very early, more rapid growth is encouraged when protection is provided.

Very early blooms are obtained by planting in hot beds and transplanting to the open ground late in March. Start them in January. When planting for seed, it is possible to start sweet peas in the fall and harvest the crop in the spring in time to plant another crop such as beans. On the coast, there are numerous varieties of flowers that may be planted after the peas are harvested. In some sections it is possible to repeat the crop, when conditions are favorable.

AVOID THICK PLANTING

When planting sweet peas, do not sow too thickly. This is the general practice of amateur gardeners. They feel sure their crop will be ever so much larger when they sow twice as much seed as necessary. If allowed to grow too close together, the flowers will be small, the stems short and the plant "spindly." If the plants are less than 10 or 12 inches apart, they should be thinned to this distance, saving the sturdiest plants. Sow about an inch deep. Cover carefully and firm the soil over the rows.

As soon as the plants are a few inches high, supply a support. If they are not planted near a fence, a wire stretched over sturdy stakes three or four feet high, set about three feet apart will supply the necessary support. Two or three wires or strings stretched along the stakes at intervals of a foot or more will supply the necessary "stairs" for the vines to climb upon.

This method is suggested when there is no other means of support and the usual trellises and wire netting are unavailable. The wire used for a support of this kind may be nothing more than our common baling wire.

When sweet peas are planted in clumps, a conical support, such as a short piece of wire netting twisted into a cone, will supply an excellent "trellis" at very little cost. The sweet peas send their blooms to the sun light, and therefore seldom produce flowers under the cone of wire. Several of these clumps of sweet peas throughout the garden, with an eye to the color scheme, make an attractive decoration in any yard.

Another means of support often used is that of the lath. Sharpen the laths and set them firmly into the soil near the plants when they are not more than three or four inches tall. Each plant should be supplied with a lath five or six feet high. If they are taken up and stored after each season, they will last for years.

The soil never should be allowed to become hard and dry. Irrigate with ditches, thoroughly, but not too often. As soon as the soil can be handled, work it into a mulch of three or four inches. When it is necessary to wash the vines, sprinkle in the evening. If it is possible to fill the trenches in which the sweet peas are planted with two or three inches of old barnyard manure and chaff, the heavy cultivation will not be necessary after irrigation.

tion and water need not be applied so frequently. Irrigate according to the weather and condition of the soil. The manure supplies a food also. When using the manure mulch, irrigate with the sprinkler.

Keep the plants well picked to prevent their going to seed. In late summer, when the vines are running out and late flowers are desired, cut them back to within 18 inches of the ground. Supply a new mulch, after spading the old one under, and give them a thorough soaking. Soon new shoots appear and, subsequently, late flowers. I have seen sweet peas treated in this manner in the semi-tropical region of California produce flowers almost continuously.

Varieties of Sweet Peas

THERE are too many varieties of the sweet pea to name them all. A few of the choice grandiflora varieties are the Prima Donna, a rose pink; Blanche Ferry, pink and white; Dorothy Eckford, pure white; Othello, dark maroon; America, white and striped in red; Flora Norton, bright blue; King Edward, bright crimson, and Hon. Mrs. Kenyon, a primrose.

A beautiful collection may be had if one purchases a few packages of the named types or asks for a seed collection of a mixture of the grandiflora types. One may have a variety from white to almost black, with all variations of stripes and splotches.

The dwarf speet peas grow only about six inches high. They are compact and bear large quantities of flowers; are excellent for beds and borders. The Spencers are so well known that we find them in all parts of the United States. The big winter Spencers should be planted in August in the semi-tropical, mild coast and mild interior regions. The winter types of the grandiflora type seem to be more successful in the interior than those of the Spencers.

Diseases of the Sweet Pea

MILDEW is one of the most serious diseases of the sweet pea. Dust with sulphur or spray with the Bordeaux mixture. The insects that attack the sweet pea are the red spider and plant lice. Soap solution or a strong solution of tobacco extract usually proves effective. It is often possible to rid the plants entirely of red spider by using a strong spray of water on both sides of the vines.

What to Do in April

POINSETTIAS usually are pruned in April. Use the prunings for cuttings. Set them not less than 18 inches apart. Keep them moist, but not wet. A trench about 18 inches or 2 feet deep, partially filled with sand before planting the cuttings, is very good. "Firm" them carefully. The sand gives the root a chance to develop before the ends of the cuttings rot.

Chrysanthemums for fall blooms should be set out before the last of April. Carnations should be in the ground before the middle of the month throughout the State.

All seedlings should be set out. There are seldom frosts after April 1. Start all vines for summer shelter this month. The bulbs that have been delayed should go into the ground early this month.

MILK RECORD CHARTS FREE. Write for a year's supply. Sent postpaid to any address in the United States FREE. Only a few left

The above advertisement is one of the many interesting announcements to be found in the "FARMERS' CLASSIFIED MARKET PLACE," pages 30 and 31. There are scores equally as worthy of your consideration. Read the little "liners." They comprise one of ORCHARD and FARM'S most valuable features. Pages 30 and 31, this issue.

The Romance of the Grape

(Continued From Page 5)

special study of new metohds of utilizing different varieties.

(9) WHAT IS YOUR OPINION CONCERNING THE IMPORTANCE OF VARIETAL CONSIDERATIONS; THAT IS, THE PLANTING OF VARIETIES ADAPTED TO GIVEN SOIL AND CLIMATIC CONDITIONS, IRREGARDLESS OF PRESENT DEMAND?

Each report emphasized the importance of planting varieties suited to local climatic conditions and other factors. One emphasized the importance of the vineyardist's experience; in other words, the planting of a variety which he has been accustomed to grow. One suggested planting only highly-colored grapes; and others pointed out the importance of color, should the price of grapes return to old levels.

(10) WHAT, IN YOUR OPINION, ARE THE GREATEST MISTAKES, IF ANY, NOW BEING MADE BY GROWERS AND MARKETING AGENCIES?

Important lessons for growers are brought out in the replies to this question; the points emphasized were poor packing; dumping on the market of large quantities, regardless of quality, holding too long for high prices by growers; poor cultural and packing methods; planting of vineyards in districts better suited to orchards; marketing immature grapes; attempt by some growers to develop larger acreage than justified by their means.

(11) IF PROHIBITION CONTINUES IN ITS PRESENT FORM, WHAT EFFECT DO YOU THINK IT WILL HAVE ON THE MARKET?

This question brought out more conflicting replies than any other, but the general belief seems to be that there would be no change unless it is for the better. One correspondent predicted under these conditions, an increase in the demand for wine grapes, and stimulation of planting. Several pointed out that the novelty of home brewing and making of wines will wear off,

(Continued on Page 34)

You can have

Running Water
Without a Storage Tank

ANY FARMER within serving distance of power lines operated by the Pacific Gas and Electric Company can have running water in his house and corral without using a storage tank.

An electrically driven pump, controlled by a pressure gauge, can be installed for less than the cost of a storage tank and tank house. The cost to operate such a pump is very nominal.

Running water is really essential in every modern home, and it is a great convenience around any corral. During the hot summer months, you will appreciate an automatic pump that raises water at frequent intervals from the cool depths of your well.

Before you start your spring improvements and repairs, *investigate automatically-controlled, electrically-driven pumping outfits.* If your hardware dealer is not familiar with them, ask the local P G and E man.

PACIFIC GAS AND ELECTRIC COMPANY

P · G · and E ·

"PACIFIC SERVICE"

P-05:3-1 Farm

ISABEL SINCLAIR'S PAGE

For the Woman in the Home

IN THE EAST: "April showers bring May flowers."
IN CALIFORNIA: "April flowers make May bowers."

Dear Friends:

Did you ever stop to realize what a foolish thing we do when we allow our past malignantly to influence our present?

The past is irrevocably gone, as far as it is concerned. We, ourselves, are responsible for keeping it alive and active.

Any good that we have obtained or received, is of its very nature a real part of the present, and immediately after coming into our possession, cannot be lost or carried off with the past when it departs.

With the evil, it is very different. From our own personal experiences, from the stories we read, the pictures and plays we see, we know that the tangle of distressing circumstances eventually smooths out and is supplanted by "and they lived happily ever afterwards."

If a man is a drunkard in 1917 and reforms in 1918 and totally abstains during the following five years, is he a drunkard in 1922? Then, if we were unhappy in 1917, is there any law that compels us to rehearse it and relash it and keep ourselves in a state of unhappiness in 1922?

Every time we relate in glowing details, the tragedies of the past, we are emptying the bowl of roses on the table before us and filling it with the dried, dead leaves of the past; then our joy is turned to sorrow.

Since you are arbiter of your thoughts, when you feel these morbid, discouraging instances hovering around for recognition, turn your thoughts instantly to the very loviest thing in your life you can think of, or read something encouraging and worth while. After the first few tussles, each one will be a little easier until you have formed a good habit in place of the bad one, and instinctively will turn from dark recollections and reflections to the bright and happy ones.

It is a game that can be played in any place and at any time, for our thoughts are always with us. Let us make them help instead of hinder us.

Sincerely,

Isabel Sinclair

Beau Claire Salad

1 cantaloupe sliced and marinated in French dressing.
1 pear or avocado sliced and marinated in lemon juice.
Chill for one-half hour.

Drain and arrange alternately on a bed of lettuce or Romaine Salad. Garnish with slices of peaches and plumped raisins. Serve with Thousand Island dressing.

Raisin Cottage Pudding

¼ cup butter or shortening,
½ cup sugar,
1 egg,
2 cups flour,
¼ teaspoon salt,
4 teaspoons baking powder,
1 cup milk,
¾ cup Sun-Maid raisins,
¼ teaspoon lemon extract.

Cream butter. Add sugar slowly, add beaten egg. Sift flour, salt and baking powder together and add to egg mixture alternately with the milk. Add plumped raisins. Beat well and pour into greased cake pan. Bake in moderate oven 30 to 40 minutes. Cut in slices and serve with hot-pudding sauce.

Raisin Whip

1 cup Sun-Maid raisins, ¼ cup sugar
¾ cup water, 1 tablespoon lemon juice,
3 stiffly beaten egg whites.

Put raisins through food chopper and cook slowly with water until water has almost boiled away. Add sugar, lemon juice and egg whites. Mix well and pour into greased baking dish. Bake in slow oven until puffy and brown. Serve at once with custard sauce.

The Most Neighborly Act I Have Ever Known

First Prize Letter

I FEEL that I must tell your readers of a wonderful experience that has come to me in the last ten months.

On April 29th last, my husband had his right leg run over by a heavily loaded wagon and both bones crushed above the ankle. Two neighbors went with him to have it set, leaving their teams in the field and dropping their work, although it was the busiest season.

We had about seven acres of barley planted and when it was ready to cut, one neighbor came and cut and bound it for us. A few days later, nine men came with their teams and implements and took possession of the ranch. They hauled the barley off and irrigated the ground so that we could plant gyp corn on it, and did everything else there was to be done at that time on the place.

Their wives came at noon, with chicken, salads, cakes, pies, and other delicacies, so they even supplied their own refreshments! It was truly a day of rejoicing on this ranch and relieved my husband of a great load of anxiety.

In a few days, other neighbors came and plowed and planted our corn and threshed the barley for us. All through the summer they helped in countless little ways that mean so much to a "small" farmer.

When the corn was ready to cut, they came and cut it and threshed it and put it in the granary for us.

It would take too many words to tell you of the countless little kindnesses that have come to us in our trouble and for which we are truly grateful. We hear of this neighborly love being expressed everywhere so we know it is not confined to any spot, but it has been wonderfully expressed to us here. I read somewhere this statement, "God's fullness cannot be expressed by a single man" and I have found some of it expressed by most every man and woman near us.—Mrs. J. W. Hannah, Laton, Calif.

Second Prize Letter

A MAN whose son had died and who needed funds, raffled off his auto. The man, a foreigner, who held the lucky ticket afterward returned the auto in exchange for the amount of money he paid for chances, about six dollars.—Mrs. W. A. Adams, Clio, Cal.

Third Prize Letter

SEVERAL years ago, four of us made a gypsy automobile trip across the country. One night late in October, we made our camp in the outskirts of Bowling Green, Kentucky, in an open lot several hundred feet from any dwelling.

The following morning was cold and very frosty and we got out of bed and began preparing breakfast with reluctance. As soon as the camp fire was built, we noticed a young man had come to the fence of a house some distance away and stood looking at us, but we were used to being stared at by this time so paid no attention.

In a short time, a little boy came down the road carrying a napkin-covered plate, and much to our surprise came up to the camp and handed the plate to my mother. He said, "Mama sent these over because it was cold, and cousin Joe counted you so there would be enough."

The plate contained fluffy, hot biscuits, split and buttered, with a glass of delicious strawberry preserves. How good they tasted!

The little boy went away, only to come running back shortly, with "Mama says, won't the ladies please come in by the fire and get warm?" We did, while the men did some repairing. We found a kindly, middle-aged woman, wife of a deceased minister, living in a small, unpretentious cottage. But it was a pleasure to meet her, for she had a sweet and lovable manner.

Nearly anyone, no matter how selfish, can show generosity to the neighbor living beside him and with whom he is acquainted; but the person who can show such neighborliness to passing strangers, who in the space of a few hours may pass forever beyond her knowledge, has attained a friendliness of spirit few of us will ever reach.—Mrs. H. P. Rogers, Burbank, Calif.

Here Are Winners in Prize Letter Contest—"The Most Neighborly Act I have Ever Known."

THE judges faced a difficult problem in selecting fram the great number of letters, the following three prize-winners. However, the different entries were judged according to their "human interest," unusualness and method of presentation, with the result that awards were made as follows:

FIRST PRIZE—$10—Mrs. J. W. Hannah, Rte. A, Box 216, Latan, Cal.
SECOND PRIZE—$5—Mrs. W. A. Adams, Clio, Plumas Co., Cal.
THIRD PRIZE—$3—Mrs. H. P. Rogers, R. F. D. 1, Box 40-A, Burbank, Cal.

The following were awarded HONORABLE MENTION:

Mrs. Emma J. Torbert, Stockton, Calif.; Mrs. L. T. Houghton, Costa Mesa, Calif.; Mrs. A. C. Thompson, East San Diego, Calif.; Mrs. George C. Carpenter, McFarland, Calif.; Mrs. Jack Kochwar, Issaquah, Wash.; Mrs. Charles C. Nonrse, Lancaster, Calif.; Miss Ida I. Hill, Tuolumne, Calif.; Mrs. H. M. Smith, Fairoaks, Calif.; Mrs. May Rist, Calistoga, Calif.; Mrs. J. B. Munley, Swanton, Calif.; Mrs. J. W. Hurley, Grabners, Calif.; Mrs. C. E. Knowles, Waldport, Ore.; Mrs. Helena M. Hargrave, South Pasadena, Calif.; Maud R. Obarr, Linden, Calif.; Mrs. M. Philip, Eucanto, Calif., Mrs. C. A. DeLane Laukershim, Calif.; Mrs. J. H. Ingram, Laton, Calif.; Mrs. W. S. Smeeton, Santa Monica, Calif.; Mrs. J. J. Driscoll, Bell, Calif.; Mrs. W. H. Tucker, Hardwick, Calif.; Mrs. J. Emerson, Auburn, Calif.; Mrs. George Tanner, Redding, Calif.; Mrs. Claude S. Brown, Newman, Calif.

A New Contest—More Cash Prizes

Similar prizes will be offered this month for letters on the subject: WHAT CAN BE DONE TO KEEP THE CHILDREN ON THE FARM? How are you meeting the problem of the call of the city? What are your ideas on the advantages of country vs. city life? Do you want your boys and girls to remain in the country? If so, what are you and your neighbors, and your community doing to bring this about? Write your letter today. You may win $10, or $5, or $3 very easily. Address Isabel Sinclair, ORCHARD and FARM, 1111 So. Broadway, Los Angeles. No letter may be more than 500 words in length. Give name and complete address. Letters must be postmarked not later than April 20th. WHAT CAN BE DONE TO KEEP THE CHILDREN ON THE FARM?

Isn't She Sweet?

THIS is little Lillian Guenther, who posed for Artist Grant's beautiful Easter cover design, for this number of ORCHARD and FARM.

At the age of ten, Lillian has achieved fame as a dancer, having appeared on both stage and screen, and taken part in many recitals. She is a pupil of Ruth St. Denis.

Penryn Stanlaws, the famous artist, has taken the greatest interest in the little girl, encouraging her in her work, and commenting enthusiastically upon her beauty.

Two years ago, Lillian was an invalid. She was taken from her home

in Arkansas to Arizona for the benefit of her health. But she did not improve and her mother, Mrs. Albert J. Guenther, brought her to Los Angeles.

Here she began to grow stronger almost at once, and before long was able to take dancing lessons. Recently she passed a "100 per cent test" for physical perfection.

This remarkable cure, Mrs. Guenther attributes largely to the climate, but also to the intense interest Lillian has taken in her work, which has diverted her mind from her ailment. The exercise, of course, is given a share of the credit.

Let us hope Lillian succeeds in extracting the naughty thorn very quickly, so that she can resume her interrupted dance.

Little Helps

When using an iron, get a brick, a white one preferred, for a stand; it will keep the iron hot longer.

When making starch add a few shavings from a candle; it will give such a nice gloss to the material when it is ironed.

When soaping collar and wristbands for the electric washer, do it on the opposite side from the dirt. They will be cleaner.

When brushing stair carpets, have a basin of warm water handy and dip the brush into it occasionally. This prevents the dust from rising and makes the colors look clear and bright.

Did you know that hot vinegar used for washing windows will remove paint and the accompanying stains easily? Windows washed while the sun's rays shine directly upon them will always be streaked as one is unable to wipe them dry.

Electrical devices are a boon to the housewife, but she must learn to handle them intelligently. Recently a California farm woman was killed instantly because of her carelessness in touching a water pipe while connecting an electric appliance. No one should touch water or plumbing connections while handling any part of the electrical system.

Note—Compare these patterns, as to price and style, with those obtainable elsewhere!

PRETTY COSTUMES
Chosen by Isabel Sinclair

These costumes are simple and can be made readily by the home dressmaker from the instructions provided. Send 15 cents in silver or stamps for each pattern desired. Address Pattern Department, Orchard and Farm, 1111 South Broadway, Los Angeles. Give full name and address.

3918—Girls' Dress
Cut in 4 sizes: 8, 10, 12 and 14 years. A 10 year size requires 4⅝ yards of 36-inch material. Price 15 cents.

3919—Juniors' Dress
Cut in 3 sizes: 12, 14 and 16 years. A 14 year size requires 3¾ yards of 40-inch material. The width of the skirt at the foot is about 2 yards. Price 15 cents.

3910—Ladies' Dress
Cut in 6 sizes: 34, 36, 38, 40, 42 and 44 inches bust measure. The 38-inch size requires 3¼ yards (for the slip) of 44-inch material and 2¼ yards of 40-inch material for the bolero. The width at the foot is 2½ yards. Price 15 cents.

3904-3513—Ladies' Costume
Waist 3904 cut in 6 sizes: 34, 36, 38, 40, 42 and 44 inches bust measure. Skirt 3513 cut in 6 sizes: 24, 26, 28, 30, 32 and 34 inches waist measure. The width at the foot is 1¾ yards. To make the dress as illustrated, will require 6⅛ yards of 40-inch material. Two separate patterns. 15 cents for each pattern.

3926—Misses' Dress
Cut in 3 sizes: 16, 18 and 20 years. To make the dress for an 18-year size requires 4 yards of 44-inch material. The width at the foot is about 2⅛ yards. Price 10 cents.

3921—Child's Play Dress
Cut in 4 sizes: 1, 2, 3 and 4 years. A 4 year size requires 2⅝ yards of 36-inch material. Price 15 cents.

3920—Child's Dress
Cut in 4 sizes: 2, 4, 6 and 8 years. A 4 year size requires 2¼ yards of 36-inch material for the dress, and 1⅜ yards for the guimpe. Price 15 cents.

3705—Ladies' House Dress
Cut in 7 sizes 36, 38, 40, 42, 44, 46 and 48 inches bust measure. A 38 inch size will require 6¾ yards of 27-inch material. The width at the foot is 2¼ yards. Price 15 cents.

3448—A Pleasing Apron
Cut in 4 sizes: Small, 32-34; medium, 36-38; large, 40-42; extra large, 44-46 inches bust measure. To make the design for a medium size will require 4½ yards of 36-inch material. Price 15 cents.

CATALOG NOTICE

Send 15 cents in silver or stamps for our up-to-date spring and summer, 1922, catalog, containing over 500 designs of ladies', misses' and children's patterns, a concise and comprehensive article on dressmaking; also "Some Points for the Needle," illustrating 30 of the various simple stitches. All valuable hints to the home dressmaker.

Use Coupon in Ordering Patterns

Herewith find.....cents, for which send me the following patterns:

Pattern No. .....Size.....

Pattern No. .....Size.....

Pattern No. .....Size.....

Be sure to give number and size. Send orders for patterns to ORCHARD and FARM, 1111 South Broadway, Los Angeles. Be sure to sign your name and address below.

Name .....

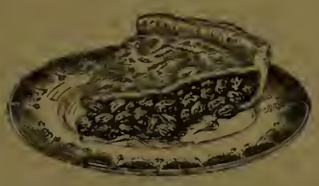
.....

Address .....

.....

Wise Mrs. Jones

How She Got the Farm Hands to Eat Her Left-over Bread



Here's another fine dessert for hard-working men. Full of the raisin's energizing nutriment. Digestible because the raisin's pure fruit-sugar is in practically predigested form.

Raisin Bread Pudding

¾ cup Sun-Maid Seeded Raisins, 2 eggs, ½ teaspoon salt, butter size of an egg, ½ cup sugar, cinnamon to taste, ½ large loaf of stale bread, 2 bananas or apples.

Soak the stale bread over night in water. When time to make the pudding press as much water as possible from the bread so that the bread is about the same consistency as dough, then take a fork and get all lumps out. Do not leave the crust if it cannot be mashed to the same consistency as the bread. Add well beaten eggs, salt and stir. Add raisins mixed with the butter. Put into dish in layers, covering each layer with sliced bananas, sugar and cinnamon. Bake in slow oven until brown. Serve with whipped cream.

All measurements for this recipe are level.

Blue Package (seeded) best for pie and bread.

MRS. JONES, a thrifty woman, once wasted much left-over bread, which annoyed her. She wondered how to save it.

One day she saw a recipe—"bread pudding with raisins."

"The raisins make it taste mighty good," said she.

Next day she tried it on the farm hands. They ate all the pudding—asked for more.

Now she serves it twice, and frequently three times a week—and has to *bake* bread especially for bread pudding.

Jones' farm is now known for "the food the farm hands get" and Jones never lacks good workers, even when help's scarce.

Thus two problems, and not unimportant either, were solved by Mrs. Jones.

Try it. See what *you* can do with raisins.

SUN-MAID RAISINS

Always ask for Sun-Maid Raisins, produced from California's choicest table grapes.

Tender, thin-skinned, juicy—the finest raisins grown.

Prepared and packaged in a great modern glass-walled plant in a famous California valley, they come to you immaculate, wholesome and always good.

Seeded, blue package (seeds removed), best for pie and bread; Seedless, red package (grown without seeds), best for stewing; Clusters (on the stem). A delicious quick dessert.

Raisins are 30 per cent cheaper than formerly—see that you get plenty in your foods.

Your grocer has them. Ask for the Sun-Maid brand.

Mail coupon for free book of more than 100 tested recipes for nutritious raisin foods.

Sun-Maid Raisin Growers,
Membership 13,000
Dept. B-704, Fresno, California

CUT THIS OUT AND SEND IT

Sun-Maid Raisin Growers
Dept. B-704, Fresno, Calif.

Please send me copy of your free book, "Sun-Maid Recipes."

Name .....

Street .....

City ..... State .....

FARMERS' CLASSIFIED MARKET PLACE

CLASSIFIED RATES

42 cents a line (average 7 words). For white space, cuts, or display type, cost is computed according to total space occupied by advertisement. For detailed schedule, ask for Advertisers' Rate Card, sent free on request.

Advertisements must reach us before the 18th of each month. Change of copy or advertisements running till forbid must be in our hands by the 10th of each month preceding date of issue. Address ORCHARD and FARM, 1111 South Broadway, Los Angeles.

RANCHES FOR SALE

$2500 CASH buys 80½ acres improved land in Apple Valley, Mojave River Irrigation District, 8 miles east of Victorville. Worth $5000. Would be cheap at $10,000, when water comes in. Four-room house, barn, chicken houses, well, pumping plant and some household furniture. Water unusually good. Decomposed granite soil. Highly productive apple, peach and pear orchards near by. Ideal climate for weak lungs and sensitive throats. Will cure asthma. Price less than cost of improvements. Land a gift at this figure. Owner in poor health and needs the money. Act quickly. It's a sacrifice that's not offered every day. M. A. Grafflin, 909 East Edgeware Road, Los Angeles.

Irrigated Vineyards

In the heart of Southern California's proven grape district, 48 miles from Los Angeles. Price $450 per acre, payable in five years, with all cultural care and water provided for three years until your vines are in bearing. $75 to $125 per ton was paid for grapes in this district last year with yield of four to eight tons on irrigated vineyards. Let us drive you out to the properties. FONTANA FARMS COMPANY, 406 Pacific Finance Bldg. Phone 14625.

MOUNTAIN RANCH for sale, 196 acres, 60 acres first class fruit land; 50 acres suitable for grain, balance good grazing land, $4000 worth of oak timber, $1000 worth of other woods, 25 acres partly cleared. 36 acres hog and cattle fenced, 44 acres cattle fenced; 12 acres cross fenced and partly planted to fruit trees, some in bearing. Plenty of water. Four-room house, small store house, pump house and pig pen. 4 H. P. gas engine. Price $4000. Frank Mason, owner, Badger, Tulare County, Cal.

OREGON—Bargain.. A fine 13-acre apple orchard, planted to Delicious, Grimes Golden and Jonathans, 11 years old; running water; well located on good county road, one mile from good educational town. This would make an ideal fruit and poultry ranch. For further particulars and price, write Box G, PHILOMATH, Benton County, Oregon.

LAND FOR SALE

IRRIGATED FRUIT LAND—Fruit makes California the "Safe Farming" State. Irrigation makes fruit farming safe. We offer irrigated bottom land, best for big yields of fruit, at liberal terms. We have a real opportunity for you. SUTTER BASIN COMPANY, 304 California Fruit Building, Sacramento, Cal.

PARADISE Fruit Growers, opportunity. Water, electricity, telephone, good roads, healthful climate. Write C. H. Nielsen, Paradise, Cal.

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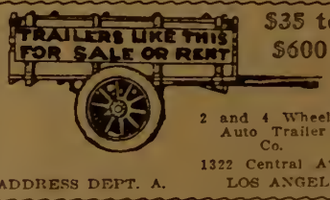

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Vegetable, flower and seeds of every description.

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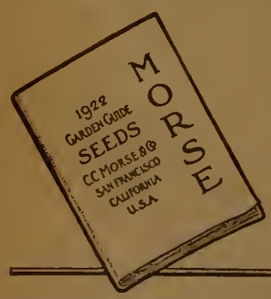

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But no one can avoid exposure—or cares to avoid it. What's the use of living if you cannot enjoy life? Are you seriously afflicted with Rheumatism — those crawling, creeping twinges of rheumatic pain that won't let you sleep at night or rest by day?

Would it be worth $5 to you to be entirely relieved of this pain? We have a remedy, for external application, that has proved so successful in numberless cases, and we have so many testimonials, that we will guarantee to refund your money in the event you are not satisfied.

We will not give you this remedy FREE, or give you a FREE trial; and, if you really want to be cured, you do not want a free remedy—you are willing to pay for relief.

Collins Remedy for Rheumatism will cost you $5 a bottle, with our absolute guarantee of money refunded in case it fails. We are financially responsible, so you run no risk whatever. We will ship a bottle, charges prepaid, to any address upon receipt of money order, check or currency for $5, or will forward C. O. D. if preferred. Order today.

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Wagner's Giant Winter Rhubarb and all varieties of Berries. Also a general line of Fruit Trees and Nursery Stock. Write for Catalog and Prices.

WAGNER'S NURSERY
(J. B. Wagner & Son)
1550 East Villa Street PASADENA, CALIFORNIA.

City Artist Gets a "Panning"

Here Are the Winners

First Prize $2.00
Mary Frances Mason, age 10, grade A-5, Tujunga School, Rt. A, San Fernando, Cal.

Second Prize $1.00
Richard Robusteli, age 14, 7th grade, Midland, Oregon.

Third Prize .....$ .50
Raymond Vincent Johnson, age 7, 2nd grade, Box 6, Rocklin, Cal.

GRACIOUS, how the boys and girls did laugh over the comical mistakes of the city artist who tried to draw a country scene! He is a very talented and popular artist, but we fear we shall have to send him on a trip to the country before we allow him to draw any more such pictures. Here are some of the mistakes our boys and girls discovered in his drawing reproduced herewith:

(1) The alfalfa seed should be kept dry, not moist. (2) The man scarcely could carry a sack of seed so easily; he would be more likely to put it on his shoulder. (3) The "gopher" is a squirrel. (4) The squirrel would not be likely to climb into an orange tree. (5) The baby probably would not be dressed in half socks and patent leather pumps while in the field with his daddy. (6) Potatoes are not set out. But are grown by planting "seed," or pieces of the potato itself. (7) The man who is supposed to be planting potatoes would be more likely to wear overalls and an old hat instead of a white shirt with cuff links, a new hat and oxfords. (8) Potatoes probably wouldn't be planted in a hay field, anyway. (9) The hen is not likely to swim like a duck. (10) There are too many seasons. Potato planting, haying, discing and seeding of alfalfa do not usually take place all at the same time, especially at the season when fruit is ready for harvest. (11) It is unlikely that a disc would be used in a hay field (unless set straight), especially while harvesting the hay. (12) One light team could not handle a heavy disc-harrow. (13) The discs are turned backwards, and the levers are in the wrong position. (14) There seems to be no clevis or chain connecting the double-trees with the disc, and the single-trees are not properly made. (15) The horse on the hay cart has cloven hoofs like a cow. (16) His collar is upside down. (17) He has no reins or tugs. (18) It is unlikely that a big stack of hay would be built from a two-wheeled cart; the man probably would use a large wagon with a hay-rack. (19) The handle of the pitchfork is not complete. (20) The man who is unloading the hay should have driven alongside of the stack instead of stopping at the end. (21) The hay stack seems too high for the man to throw hay upon. (22) The harness of the horse on the hay cart is so incomplete that there is not even a support for the shafts. (23) The harness of the team also is incomplete.

Not one of the boys and girls discovered ALL of these mistakes. Therefore the judges made the awards on the basis of age, neatness, originality and other factors, as well as the number of points.

But what of all the others who wrote such painstaking letters? The editor was so pleased with the response of the boys and girls that he decided to send a THRIFT STAMP to each one who received honorable mention from the judges. And here are their names. Is yours among them? If so, you may look for a personal letter from Mr. Knollin, enclosing your thrift stamp.

The Following Were Awarded Honorable Mention

Ruth Parker, Loma Linda, Cal.; Lo[illegible] Wylie, Maricopa, Cal.; Lois Fiscius, [illegible] hastopol, Cal.; Marie Driscoll, Bell, C[illegible] Myrtle M. Davis, Hillside, Ariz.; [illegible] Thorstrom, Fort Bragg, Cal.; Ida Tack[illegible] Escalon, Cal.; Florence Prendergast, B[illegible] lingame, Cal.; Richard Wileman, San [illegible] Oriel, Cal.; Viola Link, Anaheim, Cal.; [illegible] M. Lolax, Freshwater, Cal.; Celia I. Al[illegible] Santa Margarita, Cal.; Esther Pearl C[illegible] Los Angeles, Cal.; Vera Bryan, Fate, T[illegible] Edith Lichty, Silverton, Ore.; Jas. Know[illegible] sky, PeEll, Wash.; Ethel M. Gladson, C[illegible] tralia, Wash.; Magdalen Wallenta, N[illegible] Ulm, Minn.; Dorie Littlejohn, Tehacha[illegible] Cal.; Beatrice Prine, Maxwell, Cal.; Fr[illegible] Stahlman, Newman, Cal.; Thos. Robe[illegible] Pleyto, Cal.; Warren Murphy, Visalia, Ca[illegible] Robert Murphy, Visalia, Cal.; Alice R[illegible] tini, Reno, Nev.; Lula Kate Lamb, Fa[illegible] Texas; Marquis Casassa, Santa Rosa, C[illegible] George Ralle, Jr., Jefferson, Ore.; L[illegible] Koop, Shafter, Cal.; Anna Laura Mc[illegible] ald, Lianada, Cal.; Lloyd A. Conway, P[illegible] Cal.; Birton Heath, Gates, Ore.; Fa[illegible] Chamberlain, Toledo, Ore.; Ruth Whit[illegible] San Fernando, Cal.; Evelyn Ramsey, S[illegible] Rosa, Cal.; Theodora Trask, Westwo[illegible] Cal.; Herbert Eitzen, Dinuba, Cal.; W[illegible] Stevens, Vernalis, Cal.; Viola Stevens, V[illegible] nalis, Cal.; Brenton G. Stewart, Su[illegible] Cal.; Thomas Graves, Sheridan, Ore.; Es[illegible] Sandahl, Auburn, Cal.; Dexter Pend[illegible] Waldport, Ore.; Dorothy Martin, L[illegible] Cal.; Mary Ann Davy, Ojai, Cal.

Next month we shall announce the interesting new contest. Watch for the feature in the May number, as well as some other surprises for the boys and girls. We congratulate the winners and all we can say to those who were not so successful is "Better luck next time."

Fruit on a Thousand Hills

(Continued From Page 6)

is Vacaville and sometimes Hood that wins, but the Placer people win as often as any and get away with the usual $100 which is paid in the Eastern auctions for the first box of the season.

GREAT NURSERY CENTER

In addition to growing fruits, Placer County occupies a decidedly important place in the tree nursery industry of California. Newcastle is the home town of J. E. Bergtholdt, recent president of the California Nurserymen's Association and the man who launched the "Bergtholdt Plan" of advertising California fruits. Bergtholdt's company however, is not the only one operating in the district. Trees from Placer go to all parts of California for the stocking of new orchards and to other Pacific Coast States as well.

As is true with many other of the best orchard districts of California, it must be admitted that the plan of leasing on crop shares to Orientals has obtained a strong foothold there. A few seasons ago I was told by a storekeeper in one of the towns of the district that 90 per cent of the orchards in his vicinity were farmed by Japanese.

THE YELLOW PERIL

The Placer people have taken hold of this matter, however, and, through their Chamber of Commerce, which has its headquarters at Auburn, have adopted the "Placer Plan" of substituting white tenants for Japanese. Under this plan much already has been accomplished toward transferring the fruit industry back to the white race.

Marketing of the Placer County fruit crop is accomplished largely through the big companies operating as a unit in the Ca[illegible] Fruit Distributors, California Orchard C[illegible]

...a Inc. and California Fruit Growers' ...change. These organizations have their central headquarters in Sacramento, which is to the deciduous fruit industry what Los Angeles is to the citrus. The fruit goes in refrigerator cars, some of them "tramps" and others sold before they start.

THE "TRAMP" SHIPMENTS

The "tramp" cars are started in the general direction of New York City and whether or not they reach their destination depends on the market from day to day.

A man in Sacramento has a "line on" cars quite as effectively as a general keeps in touch with his various battalions, and the "tramp" car that reaches Omaha is diverted to any market that seems best. This fruit is sold at auction to the highest bidder and goes into the channels of trade through the push cart and grocery or direct to the big hotels through commission houses specializing in this trade.

Placer's hills are hiding places for interesting things galore. One may travel through the crooked lanes a dozen times and only brush the surface of romance. On one of the back roads you will find the combination fruit and poultry farm of Leland Fobes, former teacher of the piano, who has made chickens pay marvelously and also is growing fruit. Fobes is the inventor of the now well-known Fobes poultry house and the Fobes method of pressing hens to egg production—but that is another story.

BEAUTIFUL ESTATES

On another back road you will come upon the little estate of Francisco Frazoni, locally known as the "Italian Count." Frazoni is a man of delightful personality, vision and energy. He has reclaimed an old olive grove that was planted out in the gold rush years back and has solved his labor problem by inducing his own countrymen to come and settle on little places near him. Some day I want to tell what Frazoni is doing to help solve the problem of a steady labor supply for California orchards, but that, too, is another story.

The Birdsall olive grove at Auburn is a commercial venture of rare scenic beauty. The trees may be seen from the train as one passes through Auburn, swelling up to the top of Aeolian Heights where Harold Waldo, the new California novelist, does his work. This is the home, too, of Jackson Gregory, another successful California novelist.

OTHER ATTRACTIVE FARMS

The old J. Parker Whitney Farm, a landmark of the day when the English colony was first established in Placer County, the fine, profitable fruit farm of John L. Nagle near the old Rattlesnake Bridge and the delightful mountain home of Ellis Franklin, a director of the State Agricultural Society, near Weimer, are other places well worth visiting.

STORY OF CO-OPERATION

While this article has been about the rapid growth of Placer County's fruit industry, it really is a story of co-operation between a manufacturing industry and agriculture.

Too often manufacturing or mining, or both, have come into conflict with agriculture. But here is a case of true co-operative effort, with power development and the advancement of agriculture going hand in hand. This is as it should be in this world of ours—a true, work-together spirit exemplified in material things.

Without power development Placer's fruit industry would still be in the infant stage. With power development it has spread to over a thousand hills. Water, the willing servant of the California farmer, here produces wealth in many forms. For, in addition to the electric power and the train loads of fruit, it has made possible an advance in land values from little or nothing to $300 or $400 an acre.

Irrigation Equipment Association

An event of interest to all irrigating farmers occurred at Fresno, on March 11, when the Western Irrigation Equipment Association held a meeting, attended by members from all parts of the State. Plans were adopted for assisting users and prospective users of irrigation equipment to secure greater efficiency in operating and selecting the proper equipment for their needs. Standardization of specifications which could be more easily understood, was one proposed reform.

Arrangements were made for better display of irrigation equipment at the various fairs and shows.

A certificate for members was adopted, the idea of familiarizing purchasers of [illegible] with the Association, and assuring them through their dealings with members of service and satisfaction.

Officers of the Association are: President, A. Utley, Pelton Water Wheel Co., San Francisco; vice president, Davis J. Conant, [illegible] Well Works, San Jose; secretary, [illegible] Commercial Engine Co., Los Angeles; treasurer, C. F. Zimansky, Price [illegible] Engine Co., San Francisco. Executive committee: J. J. Merritt, Merritt [illegible]; W. F. Blackburn, (Price [illegible]); W. F. [illegible]; [illegible]; J. T. F. Clark.

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THAT'S precisely what you can have—with a Colt Lighting-and-Cooking Plant! *Artificial gas* that produces the most marvelous light known to science—a light many times brighter than that given by gas as used by city-folk; a light so near to sunlight it has coaxed hens into laying and vegetables into sprouting. . . .

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Gas for ironing.

Gas for water-heating.

THIS gas is Carbide gas, and the simple Colt machine makes it for you automatically—when you need it, and only when you need it. Starts and shuts off supply automatically.

Colt Plant Simplicity Itself

The Colt generates this wonderful gas by mixing carbide with plain, ordinary water. It does all the work itself—there is nothing to get out of order. No expensive unit requiring replacement in short period of time. The gas is yours at the twist of fingers. And carbide is readily obtainable from warehouses at all convenient points. There is no waste. Even the residue makes excellent fertilizer and whitewash. Easily installed, and the cost is astonishingly reasonable.

More Than 341,000 Have Own Gas Well

Carbide lighting and cooking is not a new-fangled, untried idea, the dream of a visionary. You will find it on more than 341,000 farms and country estates. Owners are enthusiastic about it. It makes their home stand out in the community. It makes it more valuable, more cheerful and more comfortable. It drives out the sweltering coal range—the dangerous, messy oil lamp that imperils eyesight and home. Chases drudgery. Brings sunlight wherever wanted.

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ESTABLISHED 1891

What do you think?

OLD THEORIES SCRAPPED

(1) Is green feed for poultry unnecessary?
(2) Are laying hens better off without yard space?
(3) Is the use of grit in the poultry yard superfluous?
(4) Can the moult be so controlled as to sustain egg-production?
(5) Is the "Hogan" system a fallacy?
(6) Is line-breeding necessary?
(7) Has the White Leghorn lost its reputation to the dual-purpose breeds?

These questions are answered in a startling manner by V. O. Hansen. Whether other poultrymen agree with him or not, it's a "cinch" his assertions will start some arguments! Watch for his article in the May number.

Remarkable Strides in Rhubarb Growing

THE rhubarb industry is assuming increasingly large proportions in California. Some 500 acres are devoted to this crop in the immediate vicinity of Los Angeles.

To Southern California growers, in fact, is given the credit for developing the principal market varieties now grown on the Coast.

Yet, despite the high quality of these varieties, a new and amazing type promises to displace them. It is being sold for commercial planting this year for the first time, and is known as the "Panama."

It was originated by J. B. Wagner, a rhubarb specialist, of Pasadena, as the result of nearly 15 years' work in hybridization and selection.

Not only does it grow all winter, but also it is said to yield two to three times more than any other rhubarb grown. The stalks are very long, yet succulent and free from fiber. It is said to be comparatively free from acid, and therefore, requires less sugar than others, and in many cases it need not be peeled for cooking.

Mr. Wagner in describing his own experiments with the rhubarb said: "In May, 1920, we planted an experimental plot to the Panama variety. In March, 1921 (ten months later), we picked from these plants at the rate of 7 pounds per plant, on an acre average. At that time the price was 7 cents a pound. Several thousand plants are grown on an acre. The largest amount I have picked at one time from one plant was 60 pounds, and this plant was 5 years old. Once established, the rhubarb will yield the year 'round for fifteen years or more."

Associated with Mr. Wagner in his work of producing large quantities of the plants to supply the increasing demand, is his son, A. V. Wagner, also a widely-known nurseryman and plant breeder.

The Romance of the Grape

(Continued From Page 27)

and that as a result the market gradually will settle back to normal. In contrast, a Napa County correspondent expressed the belief that prohibition will not effect the future market one way or the other because better methods of reaching the consumers are about to be launched; he predicted that even though prices dropped somewhat, the market would continue firm.

(12) IF PROHIBITION SHOULD BE MORE STRICTLY ENFORCED, DO YOU THINK IT WOULD SO AFFECT HOME MANUFACTURE OF LIQUORS AS TO DEPRESS THE MARKET?

The majority expressed the opinion that more strict enforcement would depress, if not destroy, the wine grape industry, especially if enforced to the extent of preventing the home manufacture of wine. A few did not seem to feel that more strict enforcement would have any effect, while one opined it might serve to make the market better.

(13) IF THE MANUFACTURE OF LIGHT WINES SHOULD AGAIN BECOME LEGALIZED, WHAT EFFECT DO YOU THINK IT WOULD HAVE ON THE MARKET?

This brought out a great diversity of opinion with many asserting the effect would be ruinous to the growers, as the industry would return to the old system under which most of the profits went to the wineries. However, others thought the effect would be to stabilize the market, following a decline. Three expressed the belief that for one or two seasons at least, the consumption would be increased rather than diminished and possibly the market would experience a boom.

(14) IS GRAPE PLANTING BEING OVERDONE? IF SO, WHAT BRANCH OF THE INDUSTRY WILL SUFFER MOST? IF NOT, HOW FAR CAN WE GO?

Summarizing all replies, one is impressed by the variation of views of the different representative men and by the great uncertainty with which a number look upon the future. "One man's guess is as good as another's" one said, but reviewing all their replies, the writer is lead to three very definite conclusions: (1) That a tremendous increase in production looms; (2) that if planting is being overdone, it is principally with wine grapes, and (3) that we can go as far as our gambling instincts will allow.

Hundreds of acres of Thompson Seedless and Malagas have been planted in Imperial Valley. And established vineyards in the valley are said to have rented for $250 per acre per year.

Another section that is coming to the fore as a grape district is the Domenigoni Valley, near Hemet in Riverside County. Although this is said to be one of the richest valleys in Southern California, its development has been retarded through lack of water facilities. Water now is being developed, however, by the Tokay Farms Co., who are subdividing a large tract suitable not only for grapes but also for grains, alfalfa and fruit. According to Chas. E. Katzung and C. L. Bandy, who have been active in the development of this valley, it will prove to be one of the most profitable grape sections of the South.

Another big planter in Southern California is the Fontana Land Company, San Bernardino County. On this ranch 500 acres were planted last year, and 1500 this year, the percentage to different varieties being about as follows: Muscat, 30 per cent; Sultana, 15 per cent; Zinfandel, 15 per cent; Mission, 10 per cent; Tereusa, 10 per cent; Alicante Bouchet, 10 per cent; other varieties, 10 per cent.

GIANT PANAMA RHUBARB

J. B. Wagner, originator of the giant rhubarb, is shown at the left, measuring with his son, A. V. Wagner, the breadth of a single plant. (Illustration, Courtesy Germain Seed Co.)

Sunflowers

A SPRING IDYLL

DOWN the dewy lane, they walked—
The moon hung high above.
Neither smiled and neither talked,
Though the west wind breathed of love.

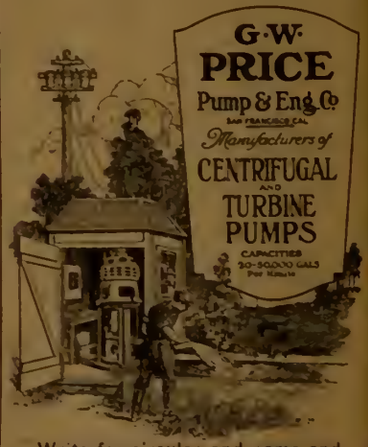
AT the gate she paused expectantly.
He curtly left her there.
For he was just a farmer boy,
And she—the old gray mare.

Justin Nutt.

STUDYING THE STARS

First Flapper (whispering, at the movie) — "Isn't Dick Daredevil the handsomest fellow?"

Second Ditto—"No, I don't think so. One of his eyes is too far apart, and one foot is nearer than the other."



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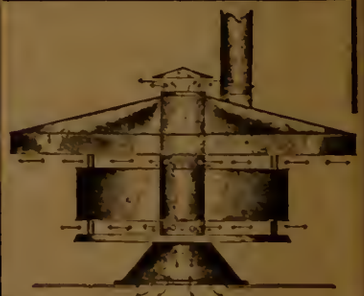

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The U. S. Government Bulletin No. 585, physicians and epicures highly recommend them for food. They pay better than poultry, require one-tenth the space and are practically immune from disease. Our stock is inspected and guaranteed. **We buy back** all your surplus stock regardless of season or weather.

Write to the Secretaries of Pet Stock Associations in this section as to our dependability. Send 10c for copy of our book, Cavy Pointers for the Beginner, with copy of our Buy-Back Plan, the fairest written.

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Children

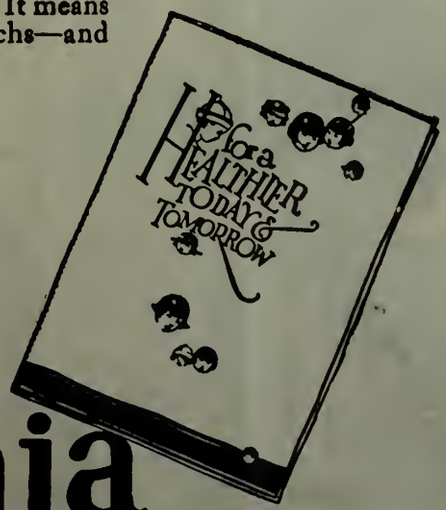
NEED A "BALANCED RATION" TOO

A "balanced ration" is more essential to children on the go and grow than it is to grown-ups. So important are prunes to the well-being of every child that a famous health writer said recently: "For your own health and the health of your children it is important to know that prunes should be eaten the year 'round and at least once every day. The American mother does not know how to take care of her children unless she teaches them to eat prunes regularly."

Good prunes—such as this State-wide, co-operative association packs and markets—are Nature's finest fruit-food. They are rich in fruit sugar. And this sugar is quickly turned into energy—for study or play. Also, they are rich in tonic iron and other mineral and "vitamine" elements. The body needs these for body "tone" and body "balance." Search where you may, you will not find a better energy-food for lively, romping folk than these sugar-laden prunes.

Many children, too, love to eat 'em raw. Good! Let them eat prunes to their fill. It is a natural sweetmeat—food and confection in one. It means unspoiled teeth and unspoiled stomachs—and better health in the bargain.

We have received so many requests for prune dishes for children that our Domestic Science Director has prepared this special recipe folder —"For a healthier today and tomorrow." The dishes are wholesome, tasteful and novel enough to appeal to children. Send for it today—it's free!



California

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Feeding SUREGROW to a growing chick is like giving a knee-high youngster a "boost" over the fence. It gives them the "lift" they need. It helps them over the top of their critical period.

From the time they are five weeks old until they are twelve weeks old these sprightly little fellows need, above all, two things: *bone and muscle.* Without a good, strong framework you can't expect chicks to mature into good layers or good breeders. And—don't lose sight of this:

The feed you give your pullets in this quick-growing stage must not be too violent or forcing. Normal, natural growth springs from normal, rational feed. And that's exactly what SUREGROW gives them. It contains the essential food values growing chicks must have for healthy, vigorous growth.

Remember that sturdy chicks mean sturdy profits—and SUREGROW insures *both.* Such common chick troubles as indigestion, moping, slow growth, are reduced to a minimum once you get your growing chicks going on this balanced ration. This explains, too, why many successful poultrymen make it a practice to feed SUREGROW dry in hoppers—so the hungry, active birds can have free access to it all day long.

How to lay a good foundation for every bird in your flock is more fully explained in the new edition of our booklet, "Makes Hens Happy." We'll gladly send a copy on request. Don't even bother to write a letter—simply clip the coupon and mail today.

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ORCHARD and FARM

MAY, 1922

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TEN CENTS

ARE THE STOCK SHOWS RUINING OUR PURE BRED ANIMALS?—PAGE 5

"You don't mean it!" "I can hardly believe it!" "Who would think you could get *this* relish out of prunes!" And more pitched in the same surprised key! For prunes no longer begin and end with stewed. *Prunes belong*—on any menu. From salad to soufflé, from coffee cake to steamed pudding—there's no limit to the unusual dishes you can make with this fine fruit-food. Our new Recipe Packet—"Sunsweet Surprises for 1922"—is full of sure-to-work-out-surprises—and it's free. Send for your packet today!

—Belle DeGraf
Domestic Science Director

Surprises!

Prune Steamed Pudding

One cup soft bread crumbs; 1 cup chopped suet; 1 cup chopped apples; ½ cup brown sugar; 1 cup chopped, uncooked prunes; ¼ cup shredded citron; 1 cup flour sifted with ½ teaspoon each of salt, soda, nutmeg, cinnamon, cloves and allspice; ½ cup molasses; 3 eggs, beaten separately. Mix in the order given, folding in the beaten white of egg at the last. Grease a pudding mold, pour in the mixture, having mold only two-thirds filled. Adjust cover and place on a rack in a kettle of boiling water and steam about three hours, having water boiling constantly.

Prune Bread Pudding

One cup prunes, washed, soaked, pitted and put through food grinder. 2 eggs, beaten; add ½ cup sugar, 2 cups scalded milk; ½ teaspoon each orange and lemon extract, prunes and 1 thick slice of bread cut in small cubes. Pour into buttered baking dish, set in pan of boiling water. Bake in moderate oven until custard is firm in center and bread is browned.

Prune Charlotte

Cooked prunes, pitted and rubbed through a coarse sieve, having one cup of prune pulp. Add ¼ teaspoon cinnamon, 1 unbeaten white of egg; ⅓ cup of sugar. Beat with a whip egg beater until consistency of whipped cream. Fill individual dishes two-thirds full and pile sweetened whipped cream on top. Garnish with a cherry.

Prune Soufflé

Take 1 cup cooked prunes that have been pressed through a colander. Beat whites of 4 eggs until stiff, add 4 tablespoons sugar, 1 teaspoon vanilla and carefully fold in the prune pulp and ½ cup chopped walnuts. Pour in an ungreased pudding dish, set in pan of hot water, bake in a moderate oven until firm. Serve with custard sauce made of yolks of 2 eggs and 1 cup milk or with whipped cream.

Prune Cream Pie Filling

One cup prunes put through coarse sieve; ½ cup chopped walnuts; 1 cup scalded milk; 2 eggs; ⅓ cup sugar; 1 teaspoon flour; 1 teaspoonful vanilla Mix sugar and flour; add to beaten eggs; pour the scalded milk over the egg mixture. Add prune pulp and walnuts, mix well and pour into a pan lined with pastry; sprinkle nutmeg over the top. Bake as for custard pie

Prune Parfait

One cup prune juice, 1 cup cooked prunes; 1 cup sugar; juice and grated rind 1 orange; 2 egg whites; 2 cups whipping cream. Cook prune juice, add sugar with grated rind and orange juice until when the syrup is dropped in cold water it forms a soft ball. Pour gradually, constantly beating, over the stiffly beaten egg whites; beat until cold; add prunes which have been pitted, cut in small pieces and fold in the whipped cream. Turn into a mold and pack in 2 parts finely cracked ice to 1 part rock salt. Let stand at least two hours before serving. To unmold dip mold in cold water, then turn on serving plate Garnish with pitted prunes stuffed with marshmallows.

Prune Pudding-Delmonico

One cup cooked prunes; 2 cups scalding milk; 4 level tablespoons cornstarch; ½ cup sugar; 2 egg yolks, 1 teaspoon butter; 1 teaspoon vanilla. For meringue 2 egg whites; 4 tablespoons sugar; ½ teaspoon vanilla. Put prunes with a little juice in a pudding dish. Scald milk in a double boiler; mix sugar and cornstarch until well blended; add to hot milk and cook fifteen minutes. Pour over the beaten yolks of eggs and mix well. Turn the custard over the prunes. Beat the egg whites until stiff; beat in gradually 2 tablespoons of sugar; fold in remaining sugar; add vanilla. Spread on top of pudding and bake in a very moderate oven about eight minutes.

11,000 grower-members

California
PRUNE & APRICOT GROWERS-*Inc.*

PACKERS OF SUNSWEET & GROWERS Brands

62 Market Street, San Jose, California. An Association of 11,000 growers.

OUR EDITORIAL POLICY

ORCHARD and FARM is a magazine of, by and for agricultural people. We believe that to the tiller of the soil is due the best that life affords. We believe that he is the bulwark of the Nation. We honor him as the basic producer. His problems are our problems; his triumphs, our triumphs; his joys and sorrows, ours. To record his achievements and expose the duplicity of his enemies; to fight for and with him; to give him genuine help and practical information, to assist, entertain and inspire every member of his happy household—that is the policy of ORCHARD and FARM.

ORCHARD and FARM

ESTABLISHED 1888
Published Monthly by Country Life Publishing Company
1111 South Broadway, Los Angeles, California
"THE SILENT PARTNER OF THE SUCCESSFUL FARMER"

YOUR QUESTIONS ANSWERED

ORCHARD and FARM is an institution of service. Subscribers may receive, free of charge, answers to questions upon any agricultural subject. Through its large staff of specialists, and its close contact with authentic sources of information, this magazine is able and willing to serve any subscriber who requires aid or information. Be sure to write name plainly and to give complete address, including street, R. F. D., or box number.

VOL. XXXIV Entered July 16, 1917, as second class matter at the Post Office of Los Angeles, California, under act of Congress of March 3rd, 1879. Subscription price $1 a year. NO. 5

Pithy Paragraphs

A chronic kicker is sure to stub his toe sooner or later.

The test of a man is whether he lives *on, for* or *with* his neighbors. Most of us hate the first, admire the second and love the third.

No critic is more impressed with his importance than the self-appointed one.

Most men slam doors, but few women close them—so there you are!

Uncle Wiseacre says a big brain may exist in a small head; it all depends upon the thickness of the skull!

Hail the lucky sheep raiser! He sells a pound of wool for 30 cents and buys it back in a $75 suit!

Hint to the pugilistically inclined citizen: If you must fight *something*, apply to the forest ranger for a job as fire fighter!

Many a little-lander has grown wealthy on his small acreage. Many a "big" farmer has failed on his half section. It isn't the *land*, but the *man* that counts!

The good old summer time is here—for some folks, glad; for others, drear. And so in winter, spring and fall—we find it just the same with all. A lovely world—or on the blink. It all depends on how we think!

Jas. C. Kyllin

Editor.

Doe, John
0124797 Exp 5-22
R F D No 14 Box 792
RIVERVIEW CALIF

Above is shown an address label of the form now being used by ORCHARD and FARM. The serial number below the name is for convenience in checking our enormous mailing list. The phrase "Exp. 5-22" at the right denotes date of expiration. Please note label on your copy in order that your renewal may be entered well in advance of expiration. Please advise promptly of corrections or change of address, giving old as well as new address.

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Not Much Logic in Pat's Philosophy!

"Tell me," insisted the argumentative Irishman, "where ye kin find a modern buildin' that has lasted as long as an old 'un!"

There are many persons who base their arguments upon equally amazing hypotheses. For example, we have the smooth-tongued orator who "proves" that a proposed reform is doomed to failure simply because it has not been tried before.

Then there is the clever fellow who "shows" advertising is an unnecessary expense that must be added to the consumer's bill. He fails to take into account the fact that advertising stimulates sales to the point where volume production cuts down the overhead cost, and thus *lowers* the price to the consumer! More than that—advertising *creates* demand for labor and raw materials, speeds up business, and increases National prosperity.

Our farmer-readers believe in advertising. Many have contributed to the campaigns of their co-operative marketing associatoins, whose "copy" appears in ORCHARD and FARM and scores of other publications.

That is one reason why ORCHARD and FARM readers have learned to make good use of the alphabetically arranged directory below—a regular and exclusive feature of ORCHARD and FARM. Our subscribers have come to realize that *"They haven't read the magazine until they've read the ads."*

Alphabetically Arranged Advertising Directory

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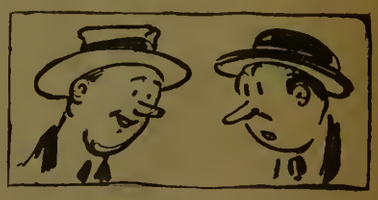
ANNOUNCEMENT

ORCHARD and FARM has acquired, through purchase, the list of olive growers who subscribed to the Fig and Olive Journal, formerly published by J. J. Hoey of Los Angeles. Copies of ORCHARD and FARM are being mailed to these new subscribers, commencing with this (the May) issue, and will be continued until the full number of copies due each former Fig and Olive Journal subscriber shall have been delivered. The latter journal, due to pressure of other duties upon Mr. Hoey, who is secretary of the California Olive Association, has been discontinued.

Commencing with the June number of ORCHARD and FARM, special articles on topics of interest to olive growers will appear from time to time in this magazine. We welcome these new subscribers to our ever growing "family," and trust they will enjoy the many other features of California's most widely read farm journal, as well as the more technical articles touching upon their specialty.—The Editor.



THE "GREEN" HAND

The Boss—"Commencing tonight, I want you to turn off the electric lights in the henhouse promptly at ten oclock, and switch them on every morning at four."

His Nibs—"Gee whiz! I may as well roost with the chickens and be done with it!"

Just when poor John had become accustomed to going to bed with the chickens, came this order to arise ahead of them! It would seem the "Boss" is egging him on to desperation! But then, life is just one thing after another, anyway. Occasionally however, we find something really worth crowing about—such as the exclusive arrangements ORCHARD and FARM has made with the leading publishers of America. We are able, in many cases, to offer you your favorite magazines in clubs with ORCHARD and FARM at less than you have been accustomed to paying for a half dozen news stand copies! We are hatching more clubbing ideas each month. By all means, send for latest subscription circular! Address ORCHARD and FARM, 1111 South Broadway, Los Angeles, Cal.

"OPPORTUNITY KNOCKS"

WANTED—To hear from owner of good ranch for sale. State cash price, full particulars.

The above advertisement is one of the many interesting announcements to be found in the "FARMERS' CLASSIFIED MARKET PLACE," pages 30 and 31. There are scores equally as worthy of your consideration. Read the little "liners." They comprise one of ORCHARD and FARM'S most valuable features. Pages 30 and 31, this issue.

Power!

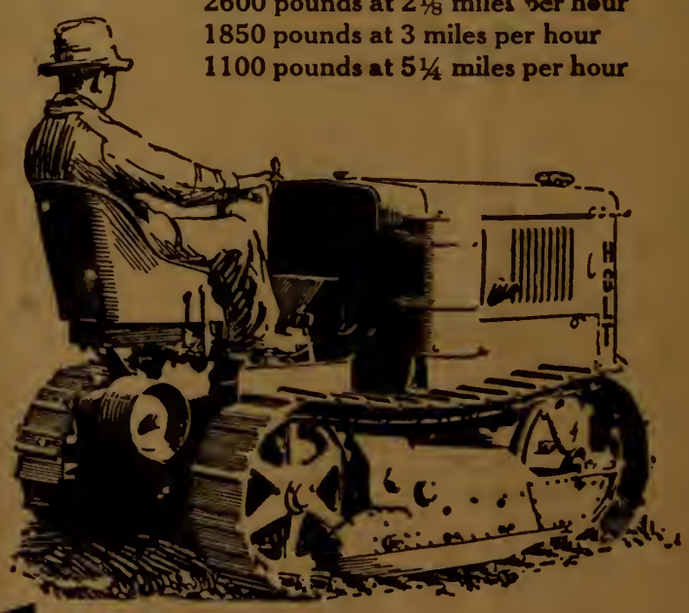
There's only one Caterpillar Holt builds it

Judge the 'Caterpillar' T35 Tractor by its performance—don't let its small size mislead you

Don't confuse "Caterpillar" T35 Tractor with the ordinary small tractor, either in dependability, endurance or power. T35 is small, but small in size only. In power it surpasses many tractors of much greater size. In quality of design and workmanship, and in dependable, enduring performance, it is not even approached by any other tractor.

In addition to a liberal warranty covering materials and workmanship, the T35 is guaranteed to deliver 15 drawbar horsepower, with the following drawbar pulls:

2600 pounds at 2⅛ miles per hour
1850 pounds at 3 miles per hour
1100 pounds at 5¼ miles per hour



Read what the users say regarding the power of T35

With a 10-foot disc weighted down and cutting from 4 to 6 inches deep, the tractor walked right along and even on the turns it did not slow up. It will handle a 7-foot scraper without any trouble and a 15-inch spring-tooth cultivator set to its extreme depth.
THEO. C. SJOQUIST, Turlock, Calif.

I used the T35 to subsoil and went down 20 inches deep the second time. I pulled my 3-gang plow nine and ten inches deep and the "Caterpillar" went along so easy you could hardly tell it was working.
JACOB DITTENBIR, Reedley, Calif.

I have pulled a new subsoiler apart twice and have had to instruct my man to use the soft pedal in the future.
W. O. GAINES, Lindsay, Cal.

I have subsoiled 65 acres of vineyard and 30 acres of pasture land to a depth of 16 to 18 inches.
OLIVER S. NEWMAN, Woodbridge, Calif.

I have subsoiled 16 inches deep. Have also pulled a 7-foot double disc—the T35 simply played with this load. It was no work for the engine at all, even on the turns at the end of rows.
G. WEYAND, Acampo, Calif.

The Holt MANUFACTURING COMPANY

Stockton, California *Peoria, Illinois*
Spokane, Wash. *San Francisco* *Los Angeles*

Tear off and mail with name and address filled in to obtain literature.

The Holt Mfg. Co., Stockton, Calif.
Please send me by return mail a copy of your new folder on "Caterpillar" T35 Tractor.

Name_____

Address_____

ORCHARD and FARM

VOL. XXXIV. MAY, 1922 NO. 5

The Show Ring of the Future

"I Wouldn't Buy a Breeding Animal That Had Been Shown"

WITH increasing frequency we hear this assertion from experienced stockmen. ORCHARD and FARM believes it high time to face the issue squarely. Realizing that this article will create considerable discussion—if not dissension—we publish it with full understanding of its significance and with the hope that readers will write us, commenting or criticising, according to their views.—Editor

ILLUSTRATED BY CHAS. T. WALTERMIRE

ALREADY breeders and others interested in the livestock industry are looking forward to the late summer and fall fairs. Show managers are preparing lists; herdsmen and shepherds are appraising their pets, and owners making mental selections of potential prize winners.

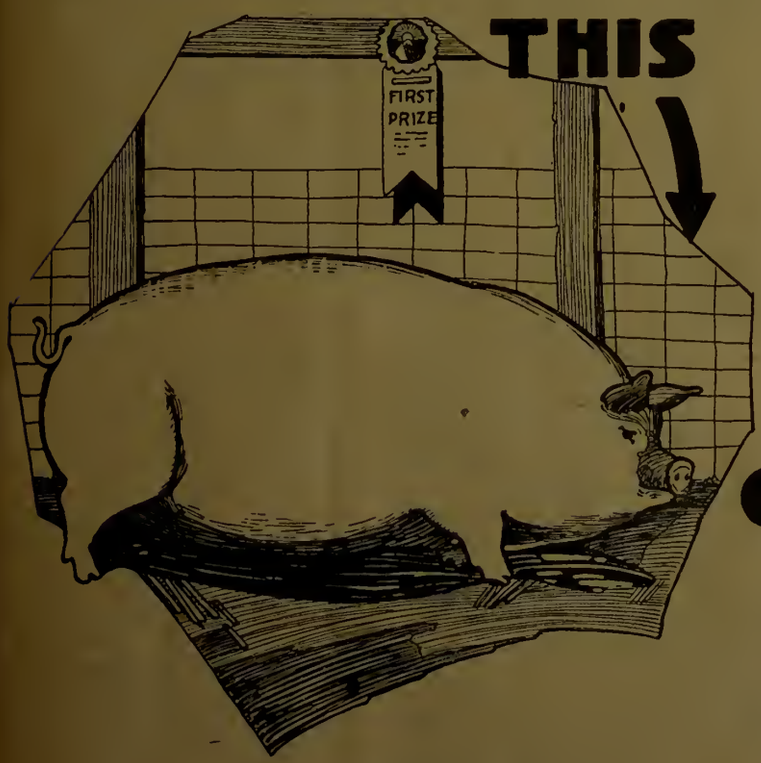
But, unfortunately, these same careful, intelligent animal lovers will deem it necessary to "fit" their charges for the show-ring. And this process, in many cases, will UNFIT the animals for anything else.

Sad, but true! Yet it is not a fault of the caretakers, nor the owners, nor the show managers, nor even the judges; it's the SYSTEM that's wrong. But who is to take the lead in breaking away from it?

When shall reason rule? How long are we to continue this perfidious program of petting and pampering? WHEN SHALL WE RECOGNIZE THE FACT THAT BREEDING ANIMALS DO NOT BELONG IN A FAT STOCK SHOW?

ARE WE ON THE EVE OF GREAT REFORM?

Eventually (not next year or the following year, but perhaps within ten years) we shall look back upon our present system and wonder how we could have been so senseless. Then it will seem inconceivable that Intelligent men should have done as we are doing now.



For we choose our finest breeding animals, "stuff" them and force their appetites, round them out with unnatural fat, lower their vitality by pampering, and generally ruin them for the purpose for which they were intended by Nature.

Ugly facts, but irrefutable! No one likes it, yet no one knows just how to get away from it. True, a few courageous owners have entered their stock at leading shows in breeding condition, but the judges could not, in justice to other entrants or their own reputations, give them the awards they deserved! Sadder, but wiser, therefore, these exhibitors have withdrawn entirely from the circuit, or gone back to the old system, loath to take the punishment that leadership involves.

AWARDS BASED UPON FALSE STANDARDS

Let us consider briefly the evils of "fitting." A magnificent animal is selected for showing. Immediately it is placed under unnatural conditions and forced to take on a load of injurious fat. Its delicate system is unbalanced, and its utility sacrificed upon the altar of pride.

A puff-up cushion for the prodding fingers of critical judges, it brings [illegible] glory and shame upon its owner—glory for the purple ribbon that is hung above its stall; shame for the injury that has been visited upon one of the Creator's masterpieces.

And why has it won the ribbon? Not because it may henceforth produce the maximum of useful progeny, but because it is smoother and fatter and better proportioned and more delicately marked than its fellows.

BUYER IS THE VICTIM

Now what happens? An enthusiastic lover of fine stock, attracted by its shapely contour, impressed by its pedigree, and spurred by its winnings, pays a princely sum for the animal and takes it home to become a factor in his own herd or flock.

If he be very skillful in the "letting down" process, he may succeed in getting it back into normal breeding condition with the loss of only a few months' time and the interest on his idle money. BUT IN NINE CASES OUT OF TEN, THE ANIMAL NEVER WILL REGAIN ITS FECUNDITY!

Our ridiculous show-ring system for the judging of breeding stock has injured the pure-bred business as much as any factor with which we have ever contended!

It is no wonder that some of the best herds and flocks in the world no longer are represented at the big shows! Their owners feel they cannot afford to injure them to the point necessary to be "in the money." Many other breeders, for the same reason, are unfairly represented by "second-string" animals, a practice injurious to both the owner and the industry.

But, most significant of all, many experienced producers and dealers unite in asserting, "I WOULDN'T BUY A BREEDING ANIMAL THAT HAD BEEN SHOWN."

THE MAN WHO DROWNED IN THREE FEET OF WATER

We are all in a position quite similar to that of the man who drowned in three feet of water because he believed it was over his head and swam until he was exhausted. When animal breeders really try to "touch bottom," they may find they have quite a solid footing after all.

And what is the remedy? Just this: A revision of show-ring rules that will penalize over-fitting and provide for the showing of breeding stock in breeding condition.

Meanwhile, one thing is certain—as long as good breeding animals are over-fed, over-pampered and over-fitted, just so long will there be disappointed buyers, loss of time and money, sterility or lowered vitality among the helpless animal victims, and retarded development of one of our finest and most important industries!

The sad part of it is that over-fitting is a boomerang, injuring most seriously the very breeders who are practicing it!—J. C. K.

OR

Weldon's Page

George P. Weldon

Information That Can Be Put Right to Work on the Ranch

By George P. Weldon
CONTRIBUTING HORTICULTURAL EDITOR OF ORCHARD AND FARM
POMOLOGIST, CHAFFEY JUNIOR COLLEGE OF AGRICULTURE

Mr. Weldon Conducting a Pruning Demonstration

In addition to his many other important duties, Mr. Weldon manages a successful diversified farm, where experiments are conducted and improved methods demonstrated. Here ORCHARD and FARM'S horticultural editor is shown giving a demonstration of pruning before a group of interested growers in the Ontario district.—The Editor.

How to Recognize and Control Peach Scab

IN SOME of the States of the East and South peach scab has been a well known disease for many years. The first record of its occurrence in the United States, in fact, dates back to the year 1889, when it was discovered in a peach orchard in the State of Indiana.

Like many others among our serious diseases, scab came to this country as an undesirable alien from Europe. It is thought to be of Austrian origin, as it was described in that country in 1877. Without doubt its occurrence is now very general throughout the United States.

The writer knew of the disease in Colorado in 1908, when it became quite serious in one locality of the Western Slope, at which time the Colorado Agricultural College undertook some control experiments.

Until recent years California has not been greatly troubled with this disease. R. E. Smith, in his bulletin on California Plant Diseases, published by the University in 1911, mentions peach scab *cladosporium carpophilum*, in connection with its occurrence on apricot trees as follows: "It causes a scabby spotting on the surface of the fruit. Has never been sufficiently serious to warrant treatment in California."

During the peach canning season of 1919, however, a considerable percentage of certain varieties of peaches coming into the canneries at Ontario showed scab infection. These were traced to some orchards in the vicinity of Chino, San Bernardino County.

DISEASE SPREADS RAPIDLY

In the 1920 canning season there was a noticeable increase of infected fruit, and in 1921 the trouble became so common and widespread throughout the peach growing districts in the county as to occasion considerable alarm.

These observations indicate that the scab disease is on the increase in Southern California and that methods of control will have to be adopted for the protection of the growers.

HOW TO RECOGNIZE THE DISEASE

The presence of the fungus in the orchard may be detected by a characteristic spotting of the surface of the peach.

The spots, when they first develop, may be little larger than a pin point. Gradually they increase in size, a number growing together and forming a scabby area on the skin of the fruit.

The color of the scabby patches varies from dark brown to almost black. There is sometimes cracking of the skin in bad cases of infection, but more often the disease, as it has been observed here, has not resulted in cracking, but simply caused the formation of a discolored area. This sometimes is merely near the apex and again occupies 50 per cent or more of the surface of the fruit.

EXTENT OF DAMAGE

Scabby fruit, while always inferior and low grade, is injured principally on the surface. From the standpoint of the fresh fruit market, the damage is less severe than for the canning market.

In the latter case, serious difficulty arises because the infected fruit cannot be peeled by the ordinary lye bath method, as the skin sticks tight wherever infection occurs. This necessitates hand trimming, which is tedious as well as expensive, and low grading is the result.

There is also more or less damage to the twigs of trees when the disease is severe. This injury, however, is not nearly so important as that which occurs on the fruit. It manifests itself in the form of small brown or gray patches on young growth and during the dormant period the presence of the disease in the orchard may be recognized by these discolored areas of the bark.

HOW FUNGUS WINTERS

According to those who have made a careful study of scab, it spends the winter as tiny threads of *mycelium* in the twigs, causing the characteristic brownish colored spots mentioned.

HOW TO CONTROL

Spraying with lime-sulfur during the early spring while trees are dormant, as generally practiced by the fruit grower, is not thought to be of any value in the control of scab.

Summer treatment, according to G. W. Keitt (scientific assistant, Fruit Disease Investigations, U. S. Department of Agriculture) is essential, and the following program is laid out by him:

"Early Varieties—Spray with self-boiled lime-sulfur 8-8-50, or wettable sulfur, 5 pounds to 50 gallons in the case of the paste (approximately 50 per cent sulfur), about one month after the petals fall.

"Midseason Varieties—Spray as for early varieties, adding a similar application about three weeks later.

"Late Varieties—Spray as for midseason varieties, adding a third application about one month after the second."

The self-boiled lime-sulfur recommended in this case is made by mixing sulfur with slaking lime, the heat generated during the slaking process causing a slight combination of the lime and sulfur, but not enough to make a caustic spray such as we have in the case of commercial lime-sulfur.

The regular formula for the self-boiled material calls for 8 pounds of stone lime and 8 pounds of sulfur to 50 gallons of water. It can be made in a barrel, wash tub or any other vessel of sufficient capacity.

METHOD OF PREPARING SPRAY

The best method is probably the one commonly employed in the Eastern States. The lime first is placed in a barrel and the sulfur, after having been made into a paste with water, is poured upon it. Enough water then is added to cause the slaking of the lime.

Care must be exercised to prevent burning, through use of insufficient water. When slaking has well begun and water in sufficient quantity to complete the process has been added, the barrel is covered with a burlap sack or something else that will retain the heat, and in this way an effective "fireless cooker" is made.

Too much cooking, however, would result in further chemical combinations and form a material which might not be safe to apply to tender foliage.

When the lime has been completely slaked and the mixture has cooled it is diluted to the required amount and sprayed on the trees.

FOR SUMMER SEASON

Self-boiled lime-sulfur is safer to use during the summer season than either Bordeaux mixture or dilute concentrated lime-sulfur extract. Its effectiveness in the control of scab and certain other fungus diseases has made it a popular spray in the East. In California, however, it has been little used up to the present time.

No doubt some of the forms of wettable sulfur may do the work of scab control as effectively as self-boiled lime-sulfur. Two common forms which are familiar to California growers and which may be purchased from insecticide and fungicide dealers are "atomic sulfur" and "milled sulfur." These things should not be recommended until further experiments are conducted.

THOROUGHNESS NECESSARY

Spraying with whatever material is used must be done thoroughly. If the tips of the twigs are missed by the

(Continued on Page 13)

Now Fruit, as Well as Livestock, Is Branded!

The remarkable machine, illustrated above, is the invention of F. Ahlburg, of Los Angeles, and is known as an "electric fruit marker.". It is being used for designating with a certain trademark several well-known brands of apples, oranges and lemons. The "Skookum" Indian head of the Oregon Growers' Association is shown at the lower left. The "Blue Goose" brand is used by the American Fruit Growers, Inc. The advantages of marking each specimen of fruit are apparent, as the value of a brand depends largely upon its protection, not to mention the advertising value of the plan. The machines are being manufactured in large numbers and shipped from California to all parts of the world, creating a "home industry," developed from the California marketing system.

PRACTICAL POINTERS IN FEW WORDS for Busy Farmers

Money Saving Plans for Increasing Efficiency—Ideas for the Farm Carpenter and Handy Man

Straw Feeder Barn

A COMBINED stock shelter and self-feeder barn is useful on stock farms where a large amount of grain is grown.

Usually the straw is blown into the barn at threshing time and the animals allowed to nose out the straw for feed and bedding when the weather is cold or stormy.

It may or may not be wasteful, according to the conditions and the kind of farming; the manure may be worth more than the straw, or the comfort to the cattle may compensate for the apparent waste of self-feeding. This plan is especially satisfactory where wild hay may be had for the cutting and hauling.

HAY CARRIER TRACK

A ridge pole hay fork track runs the length of the feeder barn, extending out to the point of each roof hood, so

that the barn may be filled or emptied by horse or engine power. The timbers forming the hay floor are braced to strengthen the building. But they must be well tied both at the center and at the sides of the building.

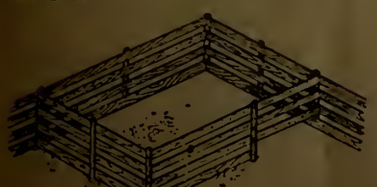
There is no particular size for this building; it may be twenty or thirty feet wide and of any length that will hold the amount of hay or straw required. A building twenty feet wide would demand hay supporting timbers about 12 feet long and 2x8 inches in size for a barn built with 18-foot posts. They should be placed about twenty inches apart.

PROVIDING NECESSARY STRENGTH

The lower ends should rest on a low concrete wall running lengthwise through the center of the barn. This wall may be extended out on both sides to make mangers for feeding grain. These slanting joists may be tied, where they meet in the center, by spiking 2x4 or 2x6 fish plates across the ends. If the barn is small, the outer ends of the joists may be toe-nailed into the side girt; if the barn is large, bolts should be used.—Herbert A. Shearer.

A Useful Pig Creep

THE owner makes more profit when his pigs learn to eat at an early age. It is customary to wean pigs when they are about six weeks old, as that is about as long a time as the sow can afford to suckle them. If the young pigs learn to eat before wean-



ing they do not suffer a set back at the loss of the mother's milk.

There is no better way to teach young pigs to eat than to give them the run of a small pen where they can find something such as apple parings, sprouted grains, alfalfa meal and warm separator milk in a small, clean trough.

The drawing shows such a pen in the corner of the barn-yard or hog-yard. The bottom board of the fence is removed, which leaves an opening large enough for a six-weeks-old pig, but not large enough to permit the entrance of the sow, or other large hogs.

Helpful Publications

THE monthly bulletin of the State Department of Agriculture, contains in each number many valuable articles. Farmers desiring to receive this publication should address Bronte A. Reynolds, Editor, Sacramento.

"Concrete Basements and Foundations" is the subject of one of a number of helpful handbooks distributed by the Portland Cement Association, Merchants' National Bank Bldg., Los Angeles. Another very valuable publication issued by this association is "How to Make and Use Concrete."

The progressive farmer who is building up a library will find of value the list of agricultural books, published as Circular No. 251, by the Illinois College of Agriculture, Urbana, Ill.

Potato Grading Chute

CULL potatoes are absolutely worthless in the market; they are even worse, because they reduce the price of the good ones. They do not increase the measure because they lie in the "chinks," and they are too small to increase the weight enough to make up for their "measly" appearance.

The illustration shows a grading chute that fits under the rear end of the wagon box. It is eight feet long and a little wider at the upper end than the wagon box. The slats are spaced one inch apart at the upper end and two inches apart at the lower end. The slats are about two inches wide, slightly rounded at the corners and planed smooth.

The chute should be placed at the proper angle to let the potatoes roll down slowly, but steep enough to pre-

vent their piling up. The potatoes should be pushed out of the wagon box so that they will slide the whole length of the slatted chute. If thrown from a shovel they will bound or skip the openings. If the chute is properly made and carefully used, it will practically do away with hand-picking.—Herbert A. Shearer.

Special Farm Garage

A FARM garage should have facilities for repair work. There should be plenty of large windows for light, a tool cabinet and a good solid vise bench with a heavy machinist's vise, large enough to hold the parts of a tractor.

The illustrations show a building 16x24 feet, with a good solid concrete floor, double entrance doors and a small side door at the shop end of the garage. There are four windows for the work end, two of which are directly over the vise bench.

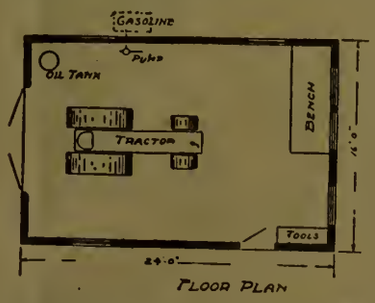
METHOD OF CONSTRUCTION

The building is a wooden structure, set on a concrete wall and built with 3x4 studding, boarded on the outside

with shiplap siding. The rafters are 3x4, tied across frame, plate to plate, with 2x4 overhead joists to make the building strong and to provide overhead storage for materials likely to be needed when making repairs upon all kinds of farm machinery.

Oil is kept in a metal tank in the corner of the room, but gasoline is stored in a well outside, safe from fire. This precaution is in accordance with fire insurance regulations.

The floor plan shows the layout of the floor and the positions of the doors and windows. In building a garage this plan well may be followed rather closely, as it has been tried out in different parts of the country and has proved a good, satisfactory investment under busy farm conditions, the expense be-

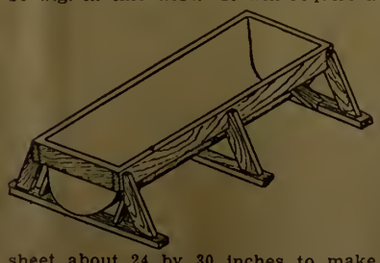


ing much less than that of some of the "fancy" and impractical so-called farm garages.

In building the storage loft, some truss work must be constructed. Short collar beams about 1 by 6 inches by 4 feet, cut on the roof bevel and well nailed with 2½-inch nails, are needed to stiffen the rafters. Also make a truss of each pair of rafters by tying them to the 2x4 cross beams with upright ties of 1-inch stuff, well nailed into the rafters and into the cross beams.—Herbert A. Shearer.

Horse Watering Trough

ONE sheet of galvanized iron will make the round part of a horse trough. This sheet should be 42 inches wide and nine feet long and at least 24-w.g. in thickness. It will require a



sheet about 24 by 30 inches to make the two end pieces.

The end pieces are cut half round as shown in the drawing, and a margin allowed to bend over for nailing at the top and for riveting and soldering at the corners.

The frame to hold the galvanized iron trough should be rather heavy and well-braced. Use 2x6 planks and bind the corners with hoop iron. Use 4-inch nails to spike the corners, and light 10s for toe-nailing the braces.

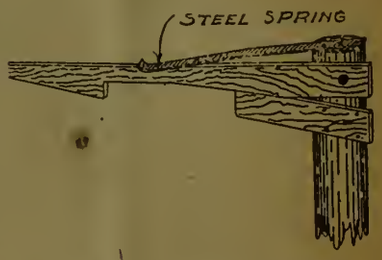
As every farmer knows, horses are rough at times around a watering trough; therefore it should be made strong and should have a wide bottom on which to stand.—Herbert A. Shearer.

Barn Door Holder

IT is customary on some farms to hunt a stick every time it is necessary to brace open the barn door.

A better way is to set a post in the ground to prevent the door from swinging too far back, and to bolt a strong wooden hook to the side of the post to catch the door and hold it.

The illustration shows the upper end of a post with the door holder hook attached. With the hook in the posi-



tion shown, it would be necessary to mortise the door in order to let the hook go through. If this is objectionable, the hook may be turned sidewise to catch the outer edge or up side down to hook under the bottom of the door.

Placed in any of these positions, it will work with equal satisfaction because the spring will keep the hook engaged until it is released.

The spring generally is a broken leaf from a buggy spring. The temper may not be too hard for drilling with a good twist drill but if so, the temper may be drawn near the thick end for one bolt hole and a clamp may be used instead of the second bolt. However, drawing the temper out of a spring without spoiling the spring is no job for a boy.—Herbert A. Shearer.

To Broadcast Seed in Fog

ON some Western wheat ranches where winter fog interferes with sowing broadcast the following method is employed to prevent delay.

A saddle horse, rider and a long piece of common wire, or rope, are the extras needed.

The wire must be long enough to reach from one seeder track to the next. The first sowing generally can be made along one side by the fence or boundary line, despite the fog. Then the requisite number of steps are marked off for the next sowing width and the seeder driven to that spot.

Of course no flag-stake has been put at the other end as it cannot be seen. Now one end of the wire is fastened to the seeder and the other end to the pommel of the saddle on the horse. Then the rider starts the horse back in the first seeder track and keeps him in it all the way across.

The driver on the seeder has but to keep the wire taut and the seeder will cast the grain over the right amount of ground just the same as though he were driving for a flag at the other end.

Instead of sowing back and forth across the field some prefer sowing around it. Then watch must be kept that the short turn is made soon enough at the four corners each time to allow for the proper width for the next sowing. Stakes may be set beforehand the right number of steps for warning the horseman. — Oscar H. Roesner

Imagination Created This Ranch

A Famous Author's Vision Fulfilled

WHEN Peter B. Kyne was a captain on duty in the muddy fields of Flanders, his California ranch existed only in his imagination, but this very imagination is Captain Kyne's greatest asset, for his brain children, loved by millions of readers all over the world, have furnished the means of making his dream come true. In both respects, therefore, it may be said truthfully that "Imagination created Sierra Vista."—The Editor.

BORN of the World War was Sierra Vista Ranch, famous Riverside County farm of Peter B. Kyne. For it was while the noted author of "The Pride of Palomar," and creator of "Cappy Ricks" was a captain abroad with the American Army, that he conceived and planned this remarkable ranch that was "made" almost over night.

Of course, that is exaggerating a bit, but when one considers that two years ago, Sierra Vista practically was bare of improvements and now is one of the best equipped stock and poultry plants in Southern California, it will be seen that almost a miracle has been performed.

Beset by shrapnel, machine gun fire and poison gas, weighed with the responsibility of his duties as an officer, frequently Captain Kyne found peace and hope in his dreams of a ranch home in California. And shortly after his return, following many harrowing experiences, he gathered together the organization which was to make this dream come true.

The location of the ranch is in the picturesque Perris Valley, a high, sunny section, 16 miles east of the city of Riverside. The Valley is particularly adapted to stock raising and the production of grain and alfalfa. Perris Valley alfalfa, in fact, frequently commands a premium, because of its high quality, while barley at Sierra Vista has threshed 31 sacks per acre averaging 112 pounds. This has been followed by a 2-ton crop of milo maize, produced the same season.

HERDS ESTABLISHED

No expense was spared by the famous novelist and short story writer in securing the finest foundation stock for his Holstein-Friesian and Duroc-Jersey herds.

Sir Ormsby Skylark Rauward, son of one of the greatest bulls the Holstein breed has ever produced was secured as herd sire. The Duroc herd was headed by "Royal I Am," a grandson of the world-famous "Great Wonder I Am," noted for his size and wonderful conformation.

During recent months, the stock has been considerably reduced, the Holstein herd now consisting of 17 females, including a number of promising heifers, and one bull.

Under the able management of "Jack" Fralinger, herdsman, proficient fitter and test milker, interesting records are being made and new potential prize winners developed.

SOME EXCELLENT RECORDS

The first cow to finish a yearly test at Sierra Vista was "Rosamaines Novena Netherlands" which at 2 years, 3 months and 4 days, gave 20,581.3 pounds of milk and 852.31 pounds of butter. The most remarkable part of Rosamaines' record was the fact that she freshened one month after completing the test.

Juliana Canary Marcedes, a typey and productive cow, has a 7-day record of 27.49 pounds of butter at 3 years and 12 days, and has just completed a yearly record of 26,215 pounds of milk and 1024 pounds of butter, making her at least the third highest in milk production in her class ever tested in California.

Another cow, Julianna Nancy, made a record for 7 days of 16.24 pounds of butter as a 2-year-old. Herdsman Fralinger, however, points with greatest pride to the achievement of seven cows tested (out of eight of freshening age) which, averaging 2 years, 11 months and 9 days, made 7-day records averaging nearly 22 pounds of butter. This, he points out, is indicative of the high production maintained throughout the herd.

The new junior sire of Sierra Vista (one year old April 12), is a son of Gerben Abbekirk Maid, a cow with three records of over 30 pounds in seven days, the highest being 34.51 pounds. This cow, now on yearly test is making over 30,000 pounds of milk. One hundred of her descendants sold for more than $50,000 at the Rosamaines Rancho sale. The young sire is making promising development and a triumphant show record is predicted for him.

METHODS OF FEEDING

Asked what he considered the most important factor in feeding his charges, Mr. Fralinger emphasized the necessity for variety in the ration. "To use only the best feeds and to change them frequently is to be sure of maximum results," said the experienced herdsman. "However, one must study his charges carefully and gauge the variety and quantity by the production and appetite of each animal. My test cows receive barley, bran, cotton seed meal, linseed oil meal, cocoanut meal, some ground oats, soaked beet pulp, molasses, and alfalfa hay. The young animals receive some bran and oats and all the alfalfa they want. Calves are taken from the cow at two days old and gradually changed from whole milk to skim milk and grain. All our cows receive dairy salt—the test cows with their feed, and others as they like it."

Mr. Fralinger emphasizes the importance of salt in the diet, but is even more insistent upon the feeding of charcoal. In fact, he maintains he could scarcely get along without this corrective. It has the effect, he asserts, of keeping down gasses and acids in the digestive tract and prevents the "burning out" so frequently experienced in heavy feeding of high producing animals. A handful of the best prepared charcoal is given each animal at each feeding.

NOT PASTURED

The dairy cattle do not run upon pasture, as this is believed to reduce their production.

The Duroc-Jersey herd is under the personal supervision of B. H. Wilkinson, who also is general manager of the ranch. The hogs now are reduced in numbers to about 250 head. Royal I Am, who last year was Grand Champion of the State, now in breeding condition, will be fitted for the fall shows.

This boar was raised by Donald Graham of Lancaster and acquired by Sierra Vista through purchase of the Dupee herd.

CORN AT LOW PRICE

The animals now on hand at Sierra Vista are principally of the Pathfinder strain.

An interesting feature in the feeding of the hogs was the recent purchase of a carload of Illinois corn, which cost but $28 a ton laid down at Perris! By means of an electrically-driven feed mill, all grain is home ground and elevated to a bin for convenience in handling.

The method of feeding is simple. After farrowing, the sows are kept off all feed for 24 hours. Next they are given a slop of wheat bran and shorts and after three or four days are put on the regular ration of ground corn 45 pounds; shorts, 27 pounds; bran,

(Continued on Page 31)

Capt. Peter B. Kyne and Some of His Argricultural Assets

(1) Juliana Canary Mercedes, a young matron that has just completed a yearly record of 26,215 pounds of milk, and 1024 pounds of butter.

(2) A promising young heifer, daughter of Canary, photographed at the age of 1 year and 10 months.

(3) "Royal I Am," a grandson of the world-famous "Great Wonder I Am"—an 800-pounder, last year grand champion of the State.

(4) A youngster of which great things are expected. Son of the famous "Gerben Abbekirk Maid," one year old April 12, 1922.

(5) A portion of the garage, implement shed and feed barn at Sierra Vista Ranch. Note, in foreground, the "speed wagon" used for hauling and delivery.

(6) A glimpse of the hog yards, showing hand car with track and turn-table used for transporting feed. Sierra Vista Ranch has the most modern equipment for swine raising.

EDITORIAL DEPARTMENT

Timely Topics among Farm Folk

James C. Knollin, Managing Editor

Wonderful Possibilities in Plant Selection

THE field of the plant breeder is ever widening. And the more closely he works with Nature, the more interesting and valuable his discoveries.

Wherever horticulturists gather, one hears speculation as to future developments in this wonderful science. Frost-resistance is mentioned in the same breath with disease resistance.

Indeed, is it not reasonable to suppose that a tree which has survived a severe frost may give buds that will perpetuate its hardy quality? Many investigators are working on this theory. And the past season has given them plenty of material, for here and there are single specimens that have come unscathed through the scourge that killed or damaged adjacent trees.

That strains could be developed which were resistant to particular diseases was scouted as ridiculous not many years ago; now disease-resistance is one of the most important considerations in the planting of grapes, as well as other fruits and plants.

Nature's rule is "the survival of the fittest." Man is hastening the process by selecting, guarding and assisting the fittest, in order that the weaklings may more quickly be supplanted.

Results come more slowly than in animal breeding, for the process is more complicated and development less rapid. But the possibilities are infinite; in fact, we have but scratched the surface of knowledge concerning this remarkable science. The super-tree or plant is always "just around the corner."

Don't Depend Too Much Upon the Census

MOST of us are accustomed to think of the Federal Census as the "last word"—a sort of statistical "Bible," so to speak.

That the figures are not always accurate, however, has been strikingly demonstrated by comparisons with other data, collected by various agencies and covering the same period.

One example: The census gave California a total production of apricots for 1919 of about 147,000 tons, whereas the Bureau of Crop Estimates collected authentic records of more than 175,000 tons, actually disposed of, not to mention great quantities used for home consumption!

Again: The census figure for the acreage of sugar beets in California was 88,000, while the California Co-operative Crop Reporting Service found 107,000 acres devoted to this crop during the same year, the report being based upon actual figures secured from beet sugar factories.

A third case: The assessors of Arizona counted more cattle and sheep than were shown by the census returns.

It is generally agreed, however, that the latest census was more inaccurate in some respects than previous counts. This was due supposedly to the high salaries prevailing at the time of the count, which reduced the number of workers, and the necessity for gathering together a great force of helpers, some of whom were inefficient and inexperienced, and nearly all of whom had to do so much work that accuracy was out of the question.

This is not intended to belittle the value of the Federal count—but, be careful before you lay any bets to be decided by the census figures!

A Mistake on the Part of the Boosters

DO WE abuse our agricultural statistics?

E. E. Kauffman, chief of the California Co-operative Crop Reporting Service, says that we do—very frequently.

Mr. Kauffman, genial and well informed friend of the farmers, has thousands of facts and figures at his tongue's end.

Statistics, to his experienced mind, are cold, hard truths, to be correlated in orderly manner and studied for comparison.

He resents, therefore, the "juggling" of crop reports sometimes indulged in by well-meaning but over-zealous enthusiasts.

"It is possible," points out the veteran U. S. D. A. official, "to interpret certain figures in such a manner as to change their meaning entirely. For example, the over-enthusiastic booster, possibly without realizing his error, may write upon the GROSS sale value of a crop at Eastern markets and announce this valuation as the NET return to the growers.

"Or the newspapers may be led into publishing only a part of a certain official report, thus altering its meaning.

"Another thing—we may be paving the way for future humiliation by giving such wide publicity to VALUATIONS and saying so little about QUANTITY. Valuations fluctuate with market prices, but our TOTAL PRODUCTION of most commodities is increasing year by year."

Mr. Kauffman points out in this connection that in 1920 the valuation of one of our principal fruit crops was only 82 per cent of the 1919 valuation, although the tonnage was greater. Again, in 1921 the valuation was only 62 per cent of the 1919 figure, while the quantity remained about the same.

Had our statistical "jugglers" been content to deal in terms of quantity, rather than value, the comparative figures would have made a better impression "on paper."

New Free Book on Weed Control

WEED control is becoming increasingly necessary and important in California.

Of timely interest and value, therefore, is the "Weed Manual," recently issued by the State Department of Agriculture.

Director Hecke, himself an experienced fruit grower and farmer, long has felt the need of a guide to identification of common weeds.

The new booklet, it is said, represents the fulfillment of this desire on the part of the Director, who has issued the following statement concerning the work:

"The California Department of Agriculture presents to the agricultural public, this handbook, couched in as popular terms as the subject matter would permit. It is hoped the manual will stimulate a common knowledge and understanding of the habits and control of common weeds, to the end that every farmer and fruit grower will feel it his duty to co-operate with the Department and his County Commissioner in the suppression and extermination of noxious species, thus aiding the Department in the enforcement of the regulatory statutes provided by the Legislature.

"In the interests of economy, it was impossible to illustrate the many weeds in natural colors, but the Department in other ways, sought to produce a comprehensive manual that will long be regarded as a ready reference to the weed flora of California.

"All communications relative to the weeds of California should be addressed to 'The Director, California Department of Agriculture, Sacramento.'"

Don't Miss the Valencia Orange Show

EVERY ORCHARD and FARM reader who is in Southern California during the period from May 23rd to 30th is urged to attend the Valencia Show, to be held at Anaheim, Orange County.

Details concerning this important event will be found on another page of this number. While it is a new enterprise, compared with the great San Bernardino show, which has become an annual event, the Anaheim exhibition promises to give the older institution a close run for high honors. By all means go if you can! It will be very much worth while.

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CONCISE CONTRIBUTIONS

On practical agricultural subjects are invited. Unavailable manuscript will be returned promptly if postage is inclosed. Preference is given to accounts of actual experience, telling how, when, where, who and why.

June Grapes bring handsome profits

Palo Verde Valley Grapes are ripe in June, 4 to 6 weeks ahead of Central California grape districts; and bear about 10 tons of fancy grapes per acre which will always sell at "first in the market" prices, and there will always be an almost unlimited market for June Grapes; a tremendous advantage.

grape vines grow and bear 100 years

Palo Verde Valley offers you the best grape land in the State. This rich river bottom land with perpetual water supply—the best virgin grape land in the State today—for $100 per acre.

and remember this is the Valley of diversified Crops

raising as a whole, a greater production of diversified products than any other one district. This valley has never known a crop failure.

Apricots in April and early May, 2 to 4 weeks ahead of other districts, is another first in the market Palo Verde Valley crop that will always command the top price and an eager market.

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Today with a few dollars you can lay the foundation for big cash profits and future independence. Write for our illustrated folder, or better still, go and investigate; prove our statements.

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Los Angeles, Calif.

Impressions of the Palo Verde Valley

By the Editor of ORCHARD and FARM

THE one subject that many California fruit growers and farmers discuss with considerable apprehension is "Overproduction."

But there is at least one agricultural district of the Golden State where this "boogaboo" has not even created a stir—the wonderful Palo Verde Valley, in Southeast Riverside County.

This fertile basin embraces about 100,000 acres of agricultural land, which has been described by Dr. George P. Clements of the Los Angeles Chamber of Commerce as "second to none in production values, with an excellent climate, a long growing season *and early maturity of all crops, insuring best markets to the grower.*"

A THRIVING "YOUNGSTER"

Palo Verde was a "baby" somewhat difficult to raise, but it has survived the usual attacks of "colic," cast off its swaddling clothes and developed into one of the most promising youngsters ever mothered by this wonderful agricultural State. Its greatest problem, that of transportation, has been solved so far as railroad service is concerned; and now improved highways, connecting the valley with Phoenix and Los Angeles, seem assured.

The water system has been enlarged to take care of increasing demands, drainage provided for, and the experimental stage in crop production passed.

The people of Palo Verde are forging ahead, optimistic and enthusiastic in the *knowledge* that theirs is one of Nature's favored sections!

The Valley is well above sea level and enjoys cooler summer nights, later springs and earlier falls than some of the other Southwestern interior districts. Its wonderful productivity has been proved again and again. Its growers reach the earliest markets with apricots and grapes, the off-season holiday market with winter vegetables and the top market with their grains, alfalfa, melons and other crops.

When Col. Thomas Blythe made his original filing on the Colorado River in 1877, giving Palo Verde Valley water rights prior to others along the mighty stream, he may have visioned to some extent the great empire that was to be builded upon this desert area; but could he have lived to see the Valley, even at its present stage of development, no doubt his fondest dreams would have been surpassed. Probably no irrigated district in the Southwest has a more certain or ample water supply than the Palo Verde Valley.

INTENSIVE CULTIVATION

And the future promises to be even more interesting and remarkable than the earlier era, for now has come the new stage of intensive farming, with better transportation, better living conditions and all the attractions that were denied the early pioneers.

The population of the Valley has grown from a few hundred persons 10 years ago to more than 6000, and the steady growth has continued despite the cotton slump which so affected all of the Southwest. That even this hard blow did not daunt the prosperous farmers of the Valley, however, was amply demonstrated during the writer's recent visit, for an equal, if not larger, acreage of cotton than was grown last year is in prospect for 1922.

ENTERING PROSPEROUS PERIOD

Easier credit has made possible the planting of much land that lay idle for a year, and the owners are looking forward with determination and optimism to the period of greatest prosperity the district has ever known.

Palo Verde is destined to achieve national fame as an early crop section, producer of the first apricots and grapes, as well as off-season vegetables and fat livestock. As a dairy and stock finishing center, in fact, Palo Verde seems to be without a peer. The Hauser Packing Company of Los Angeles is heavily interested in the Valley, finishing hundreds of carloads of hogs there and encouraging the feeding of locally-produced grain and alfalfa.

Wheat and barley make 50 to 60 bushels per acre, frequently followed by grain sorghums, which usually yield 1½ to 2 tons of grain or 15 to 20 tons of ensilage. Alfalfa, cut from April to December, often yields 8 to 10 tons to the acre. *Frequently, it is said, a perfect stand is secured on virgin soil without a cover crop.*

THE DESERT TRANSFORMED

The Valley is *of*, yet not *like*, the desert. Its earlier settlers, looking ahead, planted hundred of shade trees which, with the canals and green fields, give a fascinating impression of verdure and richness. The picturesque mountains, surrounding the almost perfect basin which forms the floor of the Valley, present kaleidoscopic changes of color.

There is that about Palo Verde which explains its hold upon many who have spent years in its development. The climate is famed for its healthfulness and the domestic water is secured from comparatively shallow wells at low cost, obviating the necessity for using ditch water.

The soil, formed by millions of tons of alluvial deposits and decayed vegetation, is of amazing fertility and depth. This feature, combined with the long growing season and plentiful supply of water, means practically a constant harvest of valuable crops.

AN IDEAL FARM

One Valley booster has figured out the possibilities of a 40-acre farm in this district. It is suggested that of the 40 acres 10 be set out to apricots and 10 to grapes, 20 acres to be reserved for grain, alfalfa and miscellaneous crops. With these income crops and a small dairy, some hogs, turkeys and chickens, it is pointed out the farmer may receive an average of $500 per acre per year from his ranch for almost an indefinite period!

Apricots appear to be one of the most attractive propositions in the Valley, for the trees reach maturity very quickly, and are said not only to ripen fruit before those in any other district, but also to give a good crop every year. Figuring that one apricot tree should average 200 pounds or more per year, on the basis of 65 trees to the acre, a yield of 7 tons per acre reasonably may be expected; in fact, this figure has been exceeded in a number of cases in the Valley.

EARLY FRUIT PRICES

Investigation of the prices of earliest apricots on the Los Angeles market shows that for several years they have sold as high as $300 a ton, f. o. b. cars, Los Angeles. But allowing only $200 net profit to the grower, it will be seen that apricots should bring in $1400 per acre.

As for the grapes, vines were observed before the 20th of April this spring which, planted as cuttings 14 months ago, were trellised and ready for production this year, experts having estimated they would yield three tons to the acre.

Figuring therefore, on 10 tons as an average production for mature vines, the grapes reaching market ahead of those from other districts and selling at a price of say, $150 a ton, the acre yield is estimated at $1500! Early varieties of grapes mature from June 15 to July 10.

The 40-acre farmer, in addition to these attractive profits, may be sure of a regular monthly cream check, for the first unit of a $150,000 creamery will be in operation at Blythe within 30 days. And according to H. J. Boyle, president of the Western Farms Dairy Company of Los Angeles, who is building the Blythe plant, more creameries will be installed in the valley by his company as rapidly as justified by dairy development.

The Blythe plant will manufacture ice cream and will include an ice plant and a cold storage warehouse of 10 carload capacity.

Many ranchers this year are raising large flocks of turkeys, a number planning to market from 1000 to 3000 birds. The climatic conditions seem to be ideal for turkey production.

With vegetables, too, the Palo Verde

(Continued on Page 31)

Snapshots of Palo Verde Wonders

(1) Attractive dwelling on the Frank Baxter Ranch, near Blythe. (2) Intake on the Colorado River, supplying irrigating water for the Valley. (3) Barley field, photographed April 15th. (E. E. Kauffman, of U. S. D. A., in background). (4 Recently-pruned and trellised grape vine, on the ranch of E. H. Wiemers, 14 months after planting. (5) The $150,000 hotel, just completed at Ripley. (6) Cutting barley for hay first week in April. (Note height and heavy stand.)

Carobs Resist Frost

OBSERVERS were agreeably surprised to note the degree of frost-resistance shown this past winter by extensive plantings of carob trees in Southern California.

Of the thousands of young trees set out along highways, few were seriously injured, although neighboring citrus groves were in some cases killed or badly damaged.

Even very young trees planted last fall in most instances escaped serious damage. Upon the foothill property of the California Carob Plantation Company, Riverside County, where is located the only extensive commercial planting of carobs in America, little damage was experienced, according to John E. McBride, who has observed closely the development of this young grove.

Typical Carob Pod Cluster

This frost-resistant quality of the carob is in the nature of a surprise to many horticulturists, who have predicted difficulty in acclimating this tree in California.

Yet this should not be surprising to those who have made a study of plant growth, asserts Lawrence Holmes, considered the best posted carob authority in this country. Mr. Holmes points out that in Southern California, the carob finds ideal soil and climatic conditions, exactly similar to those of Palestine, its native haunt. In fact, says Mr. Holmes, our "mesquite" is a wild carob, upon the root of which the commercial tree may be budded successfully.

Having previously shown its hardiness in withstanding drought, the carob seems to have come through with "flying colors." Its commercial future, of course, remains to be demonstrated, but those who have been studying this interesting tree and promoting its culture have explicit faith in its ability to make attractive profits for almost an indefinite period, as the tree is very long-lived and quite free from disease.

The pods are ground and used in manufacturing breakfast foods, stock foods, syrup and various kinds of patent preparations for both human and animal consumption. One of the most profitable outlets promises to be the manufacture of soda fountain syrups, the exceedingly high sugar content of the carob pod making it particularly valuable for this purpose, and its syrup combining readily with various flavors.

James W. Ryan, widely known carob propagator and nurseryman, of San Bernardino, who also is very enthusiastic about the future of the tree in California, points out that in addition to its other qualities, the carob is valuable as bee forage, as it blooms during the winter months, when few other sources of nectar are available.

Thousands of tons annually of carob pods are imported to this country from Mediterranean Lordering on the Mediterranean. California planters hope to supply the growing demand with home [illegible]

Cletrac Is At Home Among The Trees

CLETRAC is low-set and smooth-bodied. It slips in and out among the trees with short quick turns—comes about at the end of the row in less space than a team requires. Standing only 13 hands high—with no projecting lugs to catch low-hanging branches or scrape and bruise the bark—Cletrac is the ideal "orchard tractor."

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May Topics for Citrus Growers

By Vincent F. Blanchard

Top-Working Frosted Lemon Trees

BECAUSE of their lack of knowledge concerning environmental requirements for citrus trees, many growers in the early development of the industry, planted certain varieties in districts not adapted to their culture. This was true, particularly, of lemon plantings.

Unsatisfactory climatic conditions have made many lemon groves unprofitable; not that they have proved unhealthy, for a lemon tree may be healthy without being profitable. For example, the crop although large, may mature at a time of the year when prices are consistently low. Although the grower lives in hope that the total production over a period of years will show a profit, such is seldom the case.

Groves of this kind frequently can be worked over to oranges and made profitable under conditions where the lemons have failed.

Many of the lemon groves which were frozen during the severe frost last January were in just such unfortunately-chosen districts.

NOW IS OPPORTUNE TIME

Since considerable time will be required for such trees to recover, it is an opportune time to top-work to oranges those not too severely injured.

The writer knows of one grower who is topworking 20 acres now. His lemon trees always have been strong and prolific but the crops never seemed to reach a high market. He is having the limbs severed about 12 to 14 inches from the trunks, and plans to insert buds into the new shoots next fall. The buds will lie dormant all winter and be forced out next spring. If properly handled, this grove should become profitable for orange production.

Fertilization Test Plots

RECOGNIZING that all is not known regarding citrus fertilization, the Los Angeles County Agricultural Extension Service is undertaking a series of fertilizer tests on about ten groves in different parts of the county. Soil conditions are so different in California that fertilization for one set of conditions might not be applicable to another. It is essential therefore, that tests be conducted under a wide range of conditions.

The various combinations for the tests are as follows: Fertilizer in the spring for oranges, and over an extended period, for lemons; nitrogen fertilizers checked against complete fertilizers, all of which are to be used in conjunction with organic fertilizers; lime against no lime; gypsum against no gypsum; and lime against gypsum. These tests are to be conducted over a period of several years.

Scaly Bark Disease Control

THE recent freeze showed up the great loss sustained when a citrus tree becomes affected with scaly bark disease. Since trees so affected were in a weakened condition, they succumbed to the frost much more readily than healthy threes.

Most trees affected with scaly bark soon become unprofitable, and every effort possible should be made to control the disease.

Scaly bark disease can be controlled easily if it has not progressed too far. The treatment is to scrape off the outside tissues of the affected portion, taking care not to scrape too deep. A mistake is sometimes made however, in not scraping over a large enough area. The bark should be scraped several inches above and below, and to each side of the space where the scaly bark is visible, in order to get at the disease, which is in the tissues where it has not become visibly apparent.

DISINFECTANT IS USED

The scraping is the most important part of the treatment; in fact cures can be made without any other treatment. It is desirable, however, to use a disinfectant, and there are many to choose from. There are tree "doctors" who have patent preparations, advertised to work wonders, but money invested in them usually is wasted. It is better to use a disinfectant which has no secret about it. Bordeaux paste, if employed several months before fumigation, is satisfactory. Mercuric chloride, 1 to 1000 parts in water, can be used any time. Some people use creolinium. The essential thing is to cure the tree before the disease becomes too far advanced.

Heart Rot in Frosted Trees

MUCH of the unprofitableness and decadence of citrus trees injured by frost in past years is traceable directly to the attack of heart rot fungi.

Citrus trees are very sensitive to sunburn, particularly when injured by frost, and defoliated. Many trees had their limbs sunburned on the exposed sides, resulting in death of the bark. Cracks formed in the exposed wood, which permitted heart rot fungi spores to gain entrance and germinate. Within a few years such trees become weak and decadent, with crop production failing.

Sunburn in such trees could have been prevented if they had been sprayed with whitewash. A few growers protected their trees this year with white wash and it is unfortunate that more did not do so, for detrimental results are sure to follow sunburn.

HOW TO TREAT TREES

The cracking of bark by the frost also enables heart rot fungi to gain entrance and do their devastating work. As soon as it is definitely determined how far back the bark is killed where splitting occurs, the dead bark should be cut away and the wounds disinfected and sealed over with a wound paint. Even then it is not at all certain whether the heart rot fungi can be kept out, for the wood is exposed for a long time before treatment is given. With the best of care many of the trees will be weak and unproductive. It is highly essential that every effort possible be made to control the heart rot fungi.

Frozen Nursery Stock

ONE of the best examples and most clear demonstrations of the disastrous results that can be obtained from the use of citrus nursery trees injured by frost, even though only slightly affected, is found on the famous Rancho Sespe, a large citrus property in Ventura County. During the freeze of the year 1913, part of the nursery trees on the ranch were injured by frost, some severely and others only slightly.

Enough of the slightly frozen trees were selected to plant out two rows in one of the tracts. Non-frozen trees were planted on both sides of them. The slightly frozen trees had their tops partially killed and minute cracks on the trunks. These cracks apparently were healing when the time came to plant out. The writer examined the trees recently in order to determine how they compared with the uninjured trees planted next to them. The frost injured trees are about one-half the size of the other trees, and many of them look weak and stunted.

Many citrus nursery trees have been injured in the recent freeze, consequently the supply will be less than the demand. It will be well for every

grower who contemplates planting, therefore, to be sure the nursery stock used is not frost-injured.

Red Spider Investigations

WITH the discontinuance of the United States Department of Agriculture station at Alhambra, for the investigation of the red spider and certain other citrus insect pests, investigational work for the control of citrus red spider was dropped. The standard methods of control for red spider are far from being satisfactory and it was indeed fortunate that this work was discontinued. A committee appointed by the President of the Los Angeles County Farm Bureau to plan a program of possible subjects for investigation by research institutions in agriculture, included in its report a recommendation that the investigation of citrus red spider be undertaken again.

The report was sent to the Dean of the College of Agriculture at Berkeley and as a result, Professor Quayle of the Citrus Experiment Station at Riverside is starting such investigational work. This will include a study of the natural parasites, and the effectiveness of different sprays and dusts.

Non-Poisonous Spray Attracting Much Attention

CITRUS growers particularly, as well as other fruit producers and truck farmers are much interested in the accomplishments of a group of Los Angeles chemists. They have produced a non-poisonous spray, which, it is claimed, kills parasites not only by direct contact, but also by throwing off fumes. This remarkable chemical promises to relieve the citrus growers of the dangerous, costly and laborious method of fumigation, according to those who have developed it. It is a hydro-carbon oil emulsion, said to be not only non-poisonous, but also uninjurious to the most tender growth.

Among other advantages claimed for this material are the following: It is easy to handle, will not separate and is non-inflammable. The citrus rancher is interested, of course, in anything that will replace fumigation. To deciduous growers such a spray would appeal because of its effective control of pests and its non-poisonous attributes, while the truck farmer, is of course, impressed particularly by the latter factor. It is asserted the new chemical, called "fumispray," kills through contact and fumes the following parasites: Oyster shell, San Jose, purple, black, red, brown, cottony cushion and scurfy scales; green, black and woolly aphis; thrips; red spider; white fly pear psylla, and other forms of insect life.

George P. Weldon

(Continued From Page 6)

spray there will be a good chance for the disease to develop. New growth on the inside of the tree top is very apt to be infected and therefore should be thoroughly treated.

The foregoing recommendations are all based on Eastern work with the disease and California experiments are yet to be made. Because of the effective control that has been brought about by the use of self-boiled lime-sulfur in the East, however, it would seem safe to advocate the same treatment here, and the coming season will witness a certain amount of spraying for the control of the peach scab in Southern California, after which we hope more positive statements can be made.

EFFECT OF WEATHER

No doubt the severity of the disease will vary with the season. Damp, foggy weather in the early spring would favor infection, while the opposite condition of weather should be unfavorable to its development.

While at present the disease seems to be on the increase, it is hoped that the coming season may witness a decrease and thus allay the fear evident in some of the peach districts at this time. Growers are urged to watch the situation carefully.—G. P. W.

Summer Cover Crops

NATURALLY the climate of California has favored the growing of winter cover crops and our fruit growers have become firmly grounded in the practice of sowing in the fall and plowing under the luxuriant growth in the early spring.

This practice has been followed religiously by the citrus grower and not a few of the deciduous fruit producers also have adopted the plan.

Humus and nitrogen have been supplied by those crops of the *leguminosae* family, and the benefits are well known to fruit growers everywhere.

The summer cover crop, however, has not been so generally grown in California as in other States where it is part of the question to grow anything during the winter season, and where it has therefore been necessary to sow in the early spring and plow under after the crop has made its growth.

But there seems to be considerable evidence in support of the theory that the so-called June drop is less severe in the citrus groves where the cover crop is growing during that period of danger. Therefore, we find a tendency toward more summer cover crop planting in citrus than ever before.

In many of the deciduous fruit sections of California the winter climate is too severe for crops to grow; consequently in these places there is also interest in the summer crop. It is a well known fact that too intensive cultivation, year after year, without the addition of organic matter to supply humus and enliven the soil, results in a poor condition of the trees—and, usually, the production of small fruit. What humus there may be in the soil is burned away as the frequent cultivation goes on and the soil becomes lifeless and devoid of organic matter.

What cover crops can be successfully grown in the early spring and summer? Two that seem promising are purple vetch and white sweet clover, *melilotus* alba. Vetch has a large seed, and germinates readily in most soils. The small seed of *melilotus alba* may not start so readily and the delicate plants may be seriously affected by the wind when they first push themselves above ground. For this reason vetch is preferred by many growers. Yet there is probably no better summer cover crop than *melilotus alba* after it gets a start.

WHIPPOORWILL COWPEAS

A little later in the spring than the time for sowing vetch or *melilotus alba* (which is about April 1st in Southern California), whippoorwill peas, blackeyed beans and other legumes may be sown. The last two mentioned are not adapted to early sowing, as the wet, cool weather which usually prevails in early spring, will prevent germination. In their season they will be found satisfactory. Whippoorwill cowpeas are large and spreading, and if planted correctly will entirely cover the ground in the orchard, according to those who have planted them.

The particular legume chosen for sowing will depend upon several things, the more important of which are soil type, soil moisture and climate. Whatever experience has shown will make the best growth under a given condition should be chosen for planting. Under no consideration, however, should summer cover crops be grown where water is scarce and the trees require the available supply.—G. P. W.

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This spray has been aptly named "FUMISPRAY" for this very good reason—for a considerable time after spraying fumes are thrown off which act as effectively as direct contact of the liquid—thus every tiny crevice is FUMISPRAYED!

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Better Dried Apples—A Great Opportunity Waiting to Be Seized

The farmer takes his gnarliest fruit—
It's bitter, wormy; hard, to boot.
He won't take half the peelings off;
He leaves the hulls to make us cough.
Then on a dirty cord it's strung,
And in the garret window hung.
Where it's exposed to dust and flies,
Until it's made up into pies.

THE old song, unfortunately, involved more truth than poetry. Comparatively few dried apples are sold at retail. And the reason is that methods of producing and packing are largely those of the last century.

A. W. Christie

With improved methods of preparing dried apples California may expect to realize enormous additional revenue.

The apple is the most important and most widely used fruit in America, and although California is the leader in production of all other fruits, it is outranked as an apple producer by many States, such as New York, Missouri and Arkansas. However, while older States are at a standstill or decreasing in apple production, California is overcoming their lead by her increasing yield.

Now, more than 3,000,000 California trees produce in excess of 200,000 tons, with a value of over $12,000,000, while at least 1,000,000 trees are not yet in bearing. We think of Oregon as an apple State, yet California produces as many apples as her neighbor, or more.

Santa Cruz County, with its famous Watsonville section, is the leader, followed by the Sebastopol district of Sonoma County. These two counties produce 60 per cent of California's apples but there are many other sections where apples thrive and are being planted extensively, such as the Yucaipa Valley, San Bernardino County and other foothill districts. It is certain that the production of this fruit in California will increase rapidly.

MOST VERSATILE FRUIT

Because of their excellent keeping qualities, the principal disposition of apples naturally will continue to be as fresh fruit. The discriminating demands of the trade, coupled with exacting governmental regulations, necessitate the careful grading and culling of fresh apples. This inevitably results in a large quantity of second grade apples which must find other outlets.

Fortunately, however, apples are adapted to many uses, the principal ones being drying, canning and jelly, cider and vinegar making. Of these, drying is one of the most profitable. Vinegar has a limited market and cider, because of its competition with countless other beverages, has not experienced the expected demand during prohibition enforcement.

The use of apples in jelly-making and canning is susceptible of great development. All these products, however, require special equipment and skill, while drying may be more easily accomplished.

THE FIRST DRIED FRUIT

Apples were the first fruit dried in America. Dried apples were a staple product during the early Colonial period of this country and have become one of our most important dried fruits. *In fact, until recently, apples were the only fruit artificially dried in large quantities. Although the tonnage of dried apples in California is exceeded by all the important sun-dried fruits except pears, the output reached 10,500 tons in 1919 and the 1921 pack will probably reach 7000 tons.*

In any consideration of the future production and marketing of dried apples it is essential to know where the present output is consumed. This is a difficult matter to determine exactly, but so far as can be ascertained (for California at least), some 50 per cent is exported to foreign countries; about 45 per cent is consumed by the Army and Navy, in camps, on vessels at sea, in governmental institutions and in pie factories, while not over 5 per cent is sold in retail stores.

As other foods have improved in quality and consequently in demand and price, dried apples have remained a "cheap" product. Quality of raw material, care in production, and attractive packaging all have been sacrificed for low cost.

BULK SALES UNPOPULAR

But the bulk sale of foods in retail stores is disappearing rapidly. The modern grocerteria with its shelves of attractive cans, cartons, bottles and tiny sacks has superseded the old time grocery store with its barrels and bins and scoops and scales.

Why should not dried apples, with their many culinary uses, carefully prepared and packed in convenient cartons, take their proper place in the trade? Such a commodity costs slightly more to produce, but its quality and convenience commands a price far in excess of the cost of production.

Unfortunately, dried apples have not the support of a powerful association. However, several commercial firms have "blazed the way." Notable among these are the Caladero Products Company of California and the King Food Products Company of Oregon. These firms have sold dehydrated "cubed" apples in cartons, much above the average quality of so-called "evaporated" apples. *What these concerns have done, others can do.*

THE OLD METHOD

In the old-style kiln dryers, the apples, after being peeled, cored, sliced and sulfured, are spread thickly on a slatted floor and slowly dried by heated air, rising from a furnace below. This type of drier is simple and cheap to construct and operate, but cannot be used for other fruits. Many dryers of this type in California are operated by Chinese and even in those operated by white labor, sanitary conditions and the care given the product often leave much to be desired. Of recent years, however, several modern dehydrating plants have turned their attention to apples. These plants, using largely tunnel type equipment, dehydrate the apples on trays under carefully-controlled conditions.

CUBES VS. SLICES

The dehydration of apples in the form of cubes rather than the customary slices or "rings" is proving popular. Cubed apples dry more rapidly and uniformly than slices, and present a very attractive appearance when packed. Another advantage of cubing is that in this form the size of the original apples cannot be detected. This form of dried apple is equally satisfactory for sauce or pies and lends itself better to carton packing than the sliced form. Some dehydraters, filling orders for foreign trade, have dried the apples in quarters or sixths.

The production of attractive dried apples is dependent not so much upon the type of dryer as upon the quality of apples and the care taken in preparing, drying and packing them. The following outline of steps in the production of dehydrated apples indicates the precautions necessary to insure a product of high quality.

VARIETIES AND GRADING

Packing house culls are the principal sources of apples for drying. *It is of utmost importance that different varieties of apples be not mixed.* The practice has been to mix varieties indiscriminately and since there is great variation in the way dried apples respond to cooking, the mixed product has not found favor. Many pie bakers refuse to use dried apples for this reason, even though much cheaper than fresh or canned apples. In California the principal variety is the Newton Pippin, excellent for pies, while the Gravenstein and Bellefloower, next in importance, are more suitable for sauce. To mix these with each other or with other varieties, such as the Pearmain, Jonathan, Wagner, Hoover, Greening or Smith Cider, inevitably results in an uneven product. In addition to the separation of varieties, apples should be regraded at the dryer so that all very small, misshapen, wormy or rotten fruit is separated as suitable only for vinegar manufacture.

PEELING, CORING, TRIMMING

Peeling and coring should be done by experienced operators, using carefully adjusted machines. It is inevitable that numerous bits of peel, core or blemishes will remain as the apples come from the first operation. In order to prevent the inclusion of this extraneous matter in the dried product, sufficient women should be stationed along the conveyor bringing the apples from the peelers, to inspect and trim all those requiring attention. The slight additional cost of this trimming is more than counterbalanced by the improved quality.

Apples may be sliced by the peeling and coring machine or may be sliced or cubed by separate machines after trimming. The first system is preferable if perfect "rings" are desired.

SULFURING AND BRINING

In kiln dryers, the sliced apples are carried through a long sulfur box on a slowly-moving, wooden conveyor. The exposure to sulfur fumes varies from 20 minutes to over an hour, averaging 45 minutes. Apples which brown quickly are often dropped in a 2 or 3 per cent salt solution to arrest browning, followed by a shorter sulfuring of 10 to 20 minutes. Apples dried without sulfuring do not retain a desirable white color. Dehydrators using trays may sulfur the apples before or after traying, generally after. Since the malic acid of apples and the sulfurous acid corrode screen trays, wooden, slat bottom trays are best. The normal tray load is from 2 to 3 pounds per square foot.

The drying of apples in kilns is con-

The Old Fashioned Grocer Dug Them With a Rusty Scoop From a Dusty Bin

IN many homes, the dried apple is considered the "last word" in fruit—nobody mentions it unless nothing else can be had!

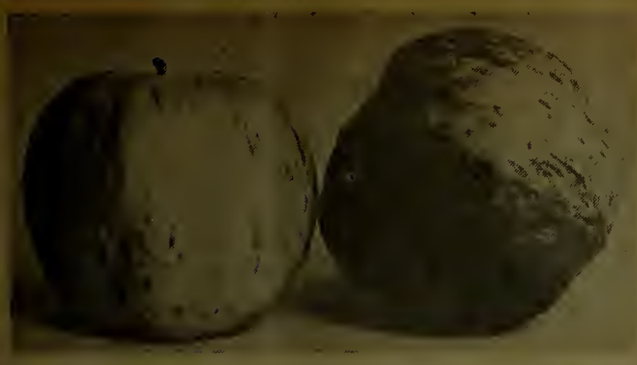
But now we see marvelous possibilities in this hitherto-despised product. Professor Christie's article is more than important; it is epochal! The apple growers of California, if they follow his suggestions, easily may add millions of dollars to their annual revenue.

Here is a great field, practically undeveloped, and ready for immediate exploitation. What the growers of other fruits have done, apple producers can do even more easily. And if anyone doubts that the dried apple may be raised to higher caste, let him consider the once-lowly prune. "Nuff sed"!—The Editor.

By Arthur W. Christie

ASSISTANT PROFESSOR OF FRUIT PRODUCTS, UNIVERSITY OF CALIFORNIA

Above—Modern, automatic apple-slicer in action. Below—Pile of dehydrated apples ready for packing.



California Coming to the Fore as an Apple Center

While other famous apple-growing States, such as New York, Missouri and Arkansas are "standing still" or decreasing in production, California is forging ahead, with some 1,000,000 young trees not yet in bearing. California now equals, if not surpasses in production, the famous apple State of Oregon!

Better Dried Apples

trolled by the observation of the operator who as a rule knows little and cares less about temperature and humidity. The drying is regulated by the amount of fuel burned, the temperature on the floor of apples rarely exceeding 165° F. The drying time will vary from 12 to 24 hours. The shoveling over of the apples on the floor frequently causes them to become more or less dirty and broken.

In the modern dehydrator, the apples on cars of trays are dried in a strong current of heated air. Apples are the easiest fruit to dry and are but little subject to case-hardening. The thin slices or cubes will dry in a few hours, if sufficient heated air is supplied.

The counter current system usually is employed, the apples being started at about 120° F., and finished at about 165° F., the drying time varying from 6 to 12 hours, according to the air flow.

Recent experiments on both a laboratory and commercial scale, show that apples may be dried in half the time by the parallel current system, starting at 210° and finishing at 150°—[illegible]°. Great care must be observed in securing uniform spreading on the trays and uniform drying conditions, or some of the product may become scorched before the remainder is sufficiently dry.

BINNING AND SWEATING

Kiln-dried apples are placed in large bins or bins and shoveled over daily for about four days in order to equalize the moisture. The apples generally are over-dried, and before packing are sprinkled with water to raise the moisture content to the maximum. This sweating and watering of the apples consumes extra labor and does not improve the quality.

Dehydrated apples may be uniformly dried to the desired moisture content and packed as soon as removed from the dehydrater—obviating the danger of contamination by dirt or insects.

MOISTURE STANDARD

Fixed regulations prohibit the sale of dried apples containing over 24 per cent of moisture and, fortunately, a very simple and inexpensive method is available for the determination of moisture in dried apples and any operator thereby may control the moisture content of his pack.

METHOD OF PACKING

The standard package is the 50-pound box, sometimes lined with paper. This package is no longer suitable for retail trade and the attractive carton of one pound or more capacity is generally making its appearance.

COST OF PRODUCTION

The writer made a careful study of the cost of drying apples in 1921 in three modern dehydraters. The three plants, designated A, B, and C, had capacities of 1, 2 and 3 tons of dried apples per day, respectively. As can be seen from the following table, the costs were very similar, averaging $10.50 per green ton:

COST PER GREEN TON OF PRODUCING DEHYDRATED APPLES

	Plant A	Plant B	Plant C
Labor	$6.90	$6.41	$7.14
Fuel	1.77	.93	1.06
Power ...		1.70	1.31
Sulfur ...	.13	.04	.10
Boxes	1.20	1.14	1.20
Total	$10.00	$10.22	$10.81

Assuming a maximum shrinkage of 7 to 1, this is equivalent to a cost of $73.50 per dry ton. Since packing house culls averaged $18 per ton in 1921, the cost of the apples would be $126 per dry ton, making a total cost, exclusive of overhead, of about $200 per ton, or 10c per dry pound. The fixed charges vary greatly, depending on the amount of investment and the annual tonnage. In the three plants investigated, the overhead costs varied from ½c to 1½c per dry pound additional.

STUDY OF KILN COSTS

A study of the cost of producing kiln-dried, evaporated apples in 1921, revealed costs of production of from $60 to $90, averaging $75 per dry ton, or a gross cost, including the cost of the apples, of 10c per pound. This plainly shows that the cost of producing boxed dehydrated apples need be no greater than for kiln dried apples, despite the better quality of the former.

For each ton of dried apples produced, there were obtained nearly 2 tons of peels and cores. If the dryer is within reach of a vinegar factory, these peels and cores may be sold for as high as $3 per ton. Many operators consider this additional income pays for the overhead costs of drying, so that in 1921, any price above 10c per pound for the dried apples, yielded a profit. One plant in 1921, not within reach of a vinegar factory, dried the peels and cores, and sold them to a jelly factory for $90 a ton in sacks, illustrating another profitable outlet for otherwise waste material.

CONCLUSION

Attractive dehydrated apples, carefully prepared from a single variety of graded fruit, and packed in sealed cartons, will cost several cents per pound more than ordinary bulk evaporated apples, but their quality and convenience command a price far in advance of their greater cost. When fresh apples sell for 5 cents a pound (equivalent to 35 cents a pound dried) it should not be difficult to sell prepared dehydrated apples at 25 cents or more per pound carton and at these prices, the business should be profitable.

Any one of these Reasons puts the De Laval in a class by itself—

1. Over 2,500,000 De Laval Separators in use—about as many as all the rest combined.

2. Won 1,091 grand and first prizes at all important expositions and fairs in the world during the past 40 years.

3. De Laval butter has won first prize at every meeting of the National Buttermakers Association, with but one exception.

4. 62% of the separators in Minnesota, the largest butter state, are De Lavals. (Based on investigation by prominent farm paper.)

5. Practically all creameries use De Laval Power Separators.

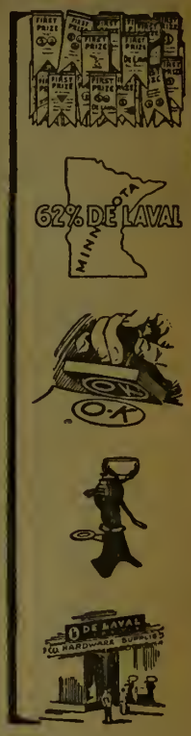
6. Endorsed, recommended and used by Government experiment stations, colleges, dairy authorities and leading dairymen everywhere.

7. Thousands in use from 15 to 20 years, and still doing good work.

8. De Laval Separators have led in every important separator improvement since Dr. De Laval invented the Separator over forty years ago.

9. Made in the world's largest and best-equipped separator factory.

10. Backed by the most thorough system of service — over 50,000 agents the world over.



Go over a De Laval point by point. Compare it with any other separator made, and you too will decide that it is the best in every way, and in the end the least expensive.

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A LITTLE OF EVERYTHING PICTORIALLY PRESENTED

IMPORTANT IMPROVEMENTS are under way at the University Farm at Davis. Above is shown the new Dairy Building now under construction. This will be one of the most completely equipped dairy instruction plants to be found at any university.

NOT A PUMP, yet it raises water in large volumes at low cost. It is known as the "Chain Water Lift" and is being manufactured at Stockton.

IN BRITAIN, DONCHA KNOW they raise fine poultry, too. This is Lord Dewar's entry, a prize-winning White Wyandotte at the recent London show. How do you like it and incidentally what do you think of the English use of "flapper"?

A FITTING MONUMENT to California horticulture is this new building soon to grace the University Farm campus. Several other buildings are to arise here in a few months.

C. B. HUTCHISON, new head of the Davis farm school. He comes from the "Show Me" state, but now he is showing others the way to better farming.

THE POOR FISH lost their happy home to these puppies; and at that, one sad little fellow was left out of the swim. A pretty tight fit, we should say—and we wonder how they'll get out! "There's the rub.

THE BUSINESS END of a tractor is where the implement is hitched. This is the way a "Wizard" 4-wheel drive machine appears with a Killefer sub-soiler, in action.

CALIFORNIA LEADS the world in development of irrigation. Here is a ern system in actual opreation in a mont orchard. (Court. Martin Iron Wo

Exploding Poultry Theories

Is Green Food Necessary?

"ESSENTIAL" is the word usually employed in discusing green feed. It has been called a cheap, valuable addition to the ration, aiding digestion, increasing production, fertility and hatchability, improving the color of yolks and performing other miracles.

But has not this practice been overdone? Green alfalfa, a popular source of such food, on an average contains about 80 per cent water, and a comparatively small percentage of protein and carbohydrates! A meal of such food may serve to fill the crop but could hardly be expected to fill the egg basket!

With these thoughts in mind, A. J. Colbert, a successful poultry raiser of Washington, dropped the green food from the ration for a number of months, feeding in its place, alfalfa meal over which he poured hot water, giving it to the hens while warm. *This plan, he says, saves both work and space, and seems to produce just as good results as the use of green alfalfa.* He feeds at the rate of 10 pounds of dry alfalfa meal to 100 hens, also giving wet mash.

Another poultryman near Van Nuys, Los Angeles County, California, uses dry alfalfa leaves which have fallen from the hay, especially during the fall when green feed is scarce. *He reports better results with less labor than obtained from the usual green stuff.*

It has been found that carotin is the substance contained in green food that seems to improve the color of the yolk. This, however, is found also in grain, notably corn. It has been noted in this connection that carotin does not affect the health of the fowl, egg production, fertility, hatchability, or the keeping qualities of the eggs. Thus it appears that while green feed as now so generally used may have some effet upon the color of the egg, it is by no means necessary.

Large Vs. Small Pens

NOT many years ago large pens, with pasture or spacious runways, were considered necessary. The space used for keeping hens, however, has been reduced a great deal until now numbers of poultrymen use no yards at all. John Raymond, a well known central California egg producer, asserts that a dust box is all that is necessary, this being built in the house.

MULTIPLE FLOOR HOUSE

Other poultrymen have gone a step farther, with the yardless house a realization. And the next development was the house with multiple floors, such as the two, three and four story buildings which have made appearance in California and in the east. The multiple floor house, its advocates point out, saves ground space, cost of building, time and labor. One of the most highly developed houses of this type, recently built in an Eastern State, is so constructed that a cellar is used for incubators, furnace and store room, the first floor for office, granary and laying pens, and the second floor for additional laying pens and for storage of ground feed.

A CONCENTRATED PLANT

Chutes lead from the feed room to the mash bins on the first floor. The excess heat from the incubators is distributed to the laying pens and often makes the use of the furnace unnecessary. The owner is so well pleased with this plan that he proposes shortly to build a similar house, possibly adding still another floor.

Since the heating facilities are not so essential in California, nevertheless the general type of building promises to become increasingly popular, especially where land values are so high that poultry raising otherwise is prohibited, such as for example in cities or suburbs.

Enthusiastic advocate of the multiple floor house method has figured out a plan whereby 3000 to 5000 hens, and brooder stock, could be maintained on a half acre, furnishing a good living and profit for the owner with the help of only one man! Two or even three such houses could be constructed, one being used for hatching, brooding, office and store room, the others for laying pens and other equipment.

Experience with the multi-floor house has shown that fowls kept on the upper floors are healthier. They get more clean, fresh air and are exposed less frequently to dampness. The most advanced type of multi-floor house is constructed almost entirely of reinforced concrete with cement floors. A few laying houses have been built of hollow tile and some of cobble stone. Such buildings suggest permanency and are more easily ventilated. Moreover, the control of mites and lice is simplified as there are fewer cracks and crevices.

Pacific Coast poultrymen, however, should bear in mind that cement houses, if built near the ocean or in the fog belt, are likely to remain cold and "clammy."

"The Old Order Changeth"

THEORIES concerning poultry raising, accepted a few years ago, now are scouted as ridiculous. Yet, even with due consideration of the rapid progress of this industry, some of the statements in the following article are a bit revolutionary. It is published, therefore, without the endorsement of ORCHARD and FARM or its Poultry Editor. However, it is written by a close observer and even though many readers may differ from the author, is sure to create useful discussion.—The Editor.

Do Laying Hens Need Grit?

EVEN the age-old theory that grit is necessary for laying hens has been exploded. If you have one of the usual grit hoppers, you may have noticed that a heavy layer of dust covers the surface of the contents, showing it has not been disturbed recently.

One observing poultryman of my acquaintance noted three years after he had filled his hoppers, the quantity of the material was practically undiminished. In other words, his fowls in three years' time had not consumed enough of the grit so that the hoppers needed refilling. He says they will never be filled again.

Another poultryman (who, by the way, has no yard space whatever) has abandoned the use of grit. Nor are his fowls sickly or drooping. On the contrary, the egg production has increased. Grit still is being used, however, for chicks and growing stock, but many poultrymen believe that when the pullets have reached the age of fourteen weeks, they need it no longer. Then the hoppers are filled with ground shell.

The hoppers for shell may be at one end of each mash hopper. Whether these hold a week's supply or are of the open-top box type, holding only enough for one day, the section used for shell should be conveniently at hand and never empty. The shells, it appears, serve the purpose of grit in addition to furnishing necessary lime. *Whenever a hen needs new teeth, she eats shell—watch her!*

What About the Moult?

THERE have been almost as many theories concerning the moult as there were poultrymen. "The early moulter lays the winter eggs," is one

(Continued on Page 20)

You Can Use Universal Brand Sprays With Confidence

Universal Brand Sprays are specially made to save citrus groves from Red Spider, Citricola and Black Scale. Everywhere trees have been sprayed with Universal Brand products these destructive pests have been promptly controlled.

Here is the spray you should use now. It will clean your groves, and stimulate the trees so the fruit will mature earlier.

B. T. S., 15 lbs. TRIUMPH, 1½ to 2½ gals. K-seen GLUE, 1 lb. (for citricola and black scale)	PER 200 GAL. TANK	B. T. S., 12 lbs. TRIUMPH, 1 gal. K-seen GLUE, 1 lb. (for red spiders)

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Be sure to call on Mr. Herbert, our assistant entomologist if you have a special problem regarding your grove. He can be found at our Los Angeles office.

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Advertisement

Rid Hens and Chicks of Lice and Mites

A Few Drops of Wonderful New Remedy in Drinking Water Does It—No Dusting, Spraying or Greasing

Any poultry raiser can easily and quickly clean out Lice and Mites by using a new Remedy recently discovered by a Kansas City Chemist and called Imperial Lice and Mite Remedy.

All that is necessary is to occasionally put a few drops of this amazing remedy in the fowls' drinking water. It renders them immune from the attack of all blood-sucking parasites, as these pests positively will not stay on a fowl taking this remedy.

It also acts as a splendid Tonic and Blood Purifier, as well as increasing egg production and growth, for with these pests eliminated, hens lay better and young stock grows faster. It is positively guaranteed not to affect the meat or eggs.

The manufacturers of Imperial Lice and Mite Remedy are anxious to get it quickly introduced among poultry raisers everywhere, and make this Special Introductory Offer. Send no money, just your name and address, and they will send you a regular full-sized $1 bottle and will also send you free a big full-sized (double strength) $1 package of Imperial White Diarrhoea Remedy, the standard, time-tested remedy. Pay the postman only $1 and a few cents postage when both packages are delivered. Any time within 30 days, if you are not satisfied with results, just say so and your money will be cheerfully refunded.

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MINERALIZED WATER ROUTS CHICKEN LICE

Tablets Dropped into Drinking Founts Banish Vermin, Make Fowls Grow Faster and Increase Egg Yield

Any poultry raiser can easily rid his flock of lice and mites, make chickens grow faster and increase their egg yield by simply adding minerals to the fowls' drinking water. This does away with all bother, such as dusting, greasing, dipping and spraying. The necessary minerals can now be obtained in convenient tablets, known as Paratabs. Soon after the fowls drink the mineralized water,

all lice and mites leave them. The tablets also act as a tonic conditioner. The health of the fowls quickly improves, they grow faster and the egg yield frequently is doubled. Little chicks that drink freely of the water never will be bothered by mites or lice.

The method is especially recommended for raisers of purebred stock, as there is no risk of soiling the plumage. The tablets are warranted to impart no flavor or odor to the eggs and meat. This remarkable conditioner, egg tonic and lice remedy costs only a trifle and is sold under an absolute guarantee. The tablets are scientifically prepared, perfectly safe and dissolve readily in water.

Any reader of this paper may try them without risk. The laboratories producing Paratabs are so confident of good results that to introduce them to every poultry raiser they offer two big $1 packages for only $1. Send no money, just your name and address—a card will do—and the two $1 packages, enough for 100 gallons of water, will be mailed, and if you are not delighted with results in 10 days—if your chickens are not healthier, laying more eggs and entirely free from lice and mites—your money will be promptly refunded. Don't hesitate to accept this trial offer as you are fully protected by this guarantee.

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"Bob" Jones' Corner

Little Stories of Farming

By Robert E. Jones

CONTRIBUTING EDITOR OF ORCHARD AND FARM

Alfalfa in the Orchard—Growing alfalfa in orchards as a stimulus to the trees is practiced quite generally in the Yakima Valley of Washington, according to H. W. Savage of Yakima, with whom I recently had a visit. Savage is one of the prominent independent fruit growers and shippers of the Pacific Coast who, for many years, has made quality fruit his aim. "My plan is to plow up the alfalfa and reseed each year," said Savage. "In this way I feel that the nitrogen gathered by the alfalfa is made available to the trees. I do not believe in the practice of growers who plant alfalfa and let it stand season after season, for I don't think this practice permits the nitrogen to get into the soil and reach feeder roots of the trees. My method is to plow the orchard in the fall and work it down well. Of course this does not destroy all of the old alfalfa, but I add a little seed to keep the stand uniform each year." Savage makes a trip to New York each season to arrange for the marketing of his fruit, mainly pears and apples. He has been in California recently studying cultural and marketing methods.

Robert E. Jones

Heath from Hawaii—Verne Heath, whose California friends have missed him of late, arrived in California a few days ago from Hawaii, where he is in charge of the C. H. Lucas herd of Holstein-Friesian cattle. Heath first came to prominence in California when he was in charge of the Napa State Hospital Holsteins under Manager Owen Duffy. He is spending several weeks in California selecting about 25 good pure-bred Holstein cows for shipment back to the Island to augment the Lucas herd. The Lucas establishment conducts a pure-bred farm and a milk business, the milk being sold in bottles to the best trade of Honolulu. Dairying is a profitable business on the Island. Heath informs me that milk retails at 25 cents a quart bottle. In selecting cows to take back to the island, he chose good individuals of fine pedigree but particularly demanded some showing of a production record. It is noticeable that buyers more and more are coming to depend upon the semi-official test as a guide to fix the prices they offer for cows.

The Rural Telephone—One reason for the Farm Bloc in Congress and the ascendency of the farmer in other particulars is the telephone—a phase of rapid communication. When any people are able to get together and thresh out their troubles, something happens. The telephone and other means of communication brought farmers together. The recent report of the Bell Telephone System shows that 65 per cent of the telephones in the world are in the United States, and of these an increasing percentage is on farms. The Bell system is adding as many new telephones each year as there are in all France! In the United States are more than 13,380,000 telephones, over which there are over 35,027,000 calls daily. Telephone equipment and real estate in the United States is valued at $1,331,313,800. Use of telephones by farmers of the world is confined almost wholly to the United States and Canada.

Killing Lions His Vocation—Jay C. Bruce of California is one of the chief aides of cattle and sheep men of this Golden State. We say "Bruce of California" for his field of effort is anywhere in the mountains of the State. Bruce is employed by the California State Fish and Game Commission and his job is killing mountain lions. During his career he has killed 350 lions; in the last three years his toll has been 93. Bruce kills lions with a 38-40 revolver instead of using a rifle, as is true with most hunters. He has three dogs which tree the lions for him and he does the rest. Bruce also is decidedly a friend of the hunter. He tells of trailing a male lion this year from February 22nd to March 4th, the day the animal finally was treed and killed. Along the trail Bruce ran along twelve carcasses of deer which this lion had killed and used for a meal!

Swapping Fruit—Persons who think about world progress, long have speculated upon the possibilities of a diet of fresh fruit and vegetables the year around for all people of the world. During March 13,500 boxes of peaches and 180 boxes of melons reached the New York market. They did not go from California, which normally opens the deciduous fruit and melon season. Chile, South America, in the southern hemisphere and with a season diametrically opposite, supplied them. Need this invasion of the American market by a Southern country worry the California grower? I think not, for our season is not the same, and it is doubtful if a few dishes of peaches and cream in the off-season will dull the appetite for in-season peaches in this country. The time is coming when the United States will supply these countries with their winter fruits; in fact, there has been already some shipping to southern countries.

Marketing Grain—Gratifying results are reported by the State Farm Bureau Federation in its efforts to get farmers of the State to market their grain through the State Farm Marketing Exchange. It will be recalled that President W. H. Walker of the State Federation recently announced a deal whereby approximately $9,000,000 worth of grain this year will be marketed through the exchange, as a result of an arrangement with George Wills & Sons, Ltd., of London. The Exchange has a lease on the big Western Milling Company elevator in Oakland, where the grain may be handled in bulk and delivered to sea-going vessels for export. T. E. Morgan, formerly manager of the grain department of the Globe Grain & Milling Company, has been engaged to act for the Farm Bureau Exchange.

Increasing Milk Production—Remarkable herd improvement, reflected in production, has been accomplished in Humboldt County, where pioneer work in cow testing was done. This is shown by some facts brought out in a recent lecture by Professor B. H. Crocheron, Professor of Agricultural Extension of the University of California. There are in Humboldt about 28,000 cows. The best 14,000 produce an average of 339 pounds of fat a year, their total production being worth $3,138,828. The 14,000 poorer cows produce an average of 263 pounds of fat a year, worth about $701,316 less than the value of the first 14,000 cows' fat yield. Now turn to the average figures for all of California. There were 778,000 cows in California in 1920 and their average was about 128 pounds of butter fat per year per cow. The product had a total annual value of $55,000,000. Crocheron stated that if the level of the State's production were brought up to that of the poorer half of the cows in Humboldt County it would mean an additional $24,200,000 per year to California dairymen. Humboldt's advance has been accomplished through testing, selection and the use of good sires.

Briggs and Bulbs—A pleasing and pleasant letter came recently from an old friend of many California farmers, known particularly to livestock men throughout the State and Oregon and Washington. The writer was C. A. Briggs, field man at various times for several publications and a genial and helpful man of varied experience and fine personality. Briggs is doing well growing gladiolus bulbs. Much of the credit for the success of the venture, about which I hope to write more later, is due to Mrs. Briggs, who has been collecting and growing rare varieties and new types of bulbs for many years. While Briggs was "on the road" for farm magazines, Mrs. Briggs grew bulbs in her back yard. The two although they experienced a number of seasons of disappointment, steadfastly believed in the future of their bulb idea. Finally, two years ago, they located at Monterey, not far from the Hotel Del Monte, and now, Briggs writes me, their bulb business is going fine. Last year's profits ran up to a figure that looks good to the average executive of a prosperous business. Everyone who knows Mr. and Mrs. Briggs will be delighted with their success.

Still More Horses—Nearly 100 years ago, when the first railroad train made a successful journey, someone predicted that in a few years the horse would be a creature of the past. That prediction has been forgotten. Then came the tractor and the automobile and we hear today the prediction that the day of the horse soon will be done. I notice, however, in a recent issue of the Kansas City Star, that Professor H. H. Kildee of Iowa State College says that 20 per cent more mares have been bred this year than last.

"Where Have They Went?"—Ever notice how completely some prominent figure of yesteryear may drop out of sight. All of us remember D. O. Lively, who was Director of Livestock for the Panama-Pacific Exposition and later carried on a "Raise More Hogs" campaign in California. Lively was for a time one of the most prominent figures in California livestock circles. He disappeared completely for a while and then, from far-away Siberia, came the news note that he was in charge of a relief expedition at Archangel.

Kreutzer Active—George C. Kreutzer, Superintendent of the California State Land Settlement Colony at Durham, has been speaking before a number of semi-public organizations of late on land colonization questions. Kreutzer is the practical man who handled the details of the Durham settlement so successfully. He is now to give a part of his time to land settlement investigations for the Division of Rural Institutions of the University of California College of Agriculture and the State Department of Public Works.

Hastings of Texas—Frank S. Hastings, head of the S. M. S. Ranch of Texas, who came to California in February to appear before stockmen at their annual conclave at Davis, is one of the best known men of the cattle industry in the United States. S. M. S. Ranch has accomplished remarkable things in range improvement and in development of a beef animal. Hastings is a man of charming personality and has made friends in all parts of the country. In addition to managing that great ranch he has found considerable time to write. His articles on recollections of a ranchman have excited much interest.

The Spinach Center—Within the last three years Sacramento has become the spinach center of the canning world. To readers other than those who know farming terms this first sentence would be mistaken for humor, but it is quite a serious statement. Spinach is much in demand now, for Americans are learning that they must eat more forage if they are to maintain health. Hence much spinach is canned. In California spinach can be grown during the winter upon soil that will produce tomatoes during the summer. The planting of spinach has lengthened the season of operation for canneries at Sacramento, so that they are now kept busy ten months of the year instead of seven to nine as formerly. This is a big economy in the canning industry.

Partnership With the Bee

By W. B. Dickenson

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Article V—Chunk Honey

IN THE production of chunk honey, which really is a good method of harvesting the honey crop, shallow frames are used in place of sections. These frames are the same length of brood frames but are only 5¼ inches deep. A one-inch starter of bee comb foundation is used in each frame. As soon as filled and capped, these frames are taken from the super and the honey comb is cut up into suitable chunks and placed in jars. These jars are filled completely with the honey, which necessarily leaks from the combs in the cutting up process, as with strained honey.

MEETS READY SALE

Chunk honey, neatly packed in clear glass jars and suitably labeled, sells remarkably well in stores; in much better than extracted honey, from three to four cents per pound is easily obtained. Some large farmers employ this method solely, and any a beekeeper who keeps a few for family use it is by far the best method to use.

The management of the bees, if chunk honey is the object, is the same as when running for comb honey in section form, with the exception that it is unnecessary to remove the second story.

The object in removing the second story is to force the bees into the sections, but shallow frames are readily accepted by the bees; therefore, it is an advantage to allow the extra body to remain in the hive, the shallow frame supers being placed directly above this second story.

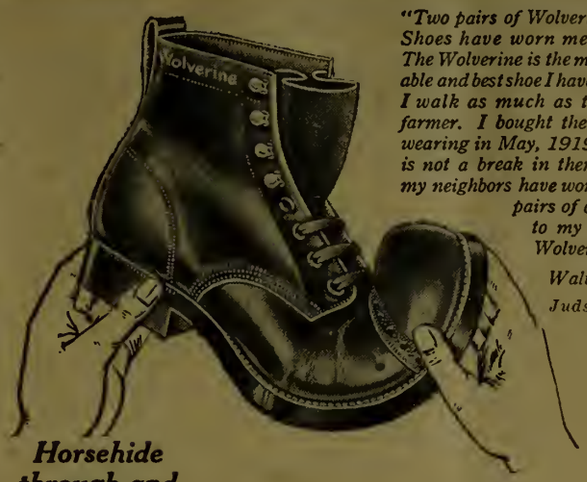
Supers containing frames are filled much more quickly than sections; therefore, take care that no shortage of room for the storage of the crop occurs. If bees experience a shortage of super room they commence at once to hang out on the front and sides of their hive.

This loafing habit, once contracted, is difficult to overcome, but is often continued for the remainder of the season.

On returning the frames to the hive from which the combs have been cut, it is unnecessary to fix another starter of comb foundation, as the bees again will build their combs in exactly the same position without this guide.

(Editor's Note—Mr. Dickenson's next article will deal with "Extracted Honey.")

WOLVERINE
Comfort Shoe



"Two pairs of Wolverine Comfort Shoes have worn me five years. The Wolverine is the most comfortable and best shoe I have ever worn. I walk as much as the average farmer. I bought the pair I am wearing in May, 1919, and there is not a break in them. Some of my neighbors have worn out three pairs of other makes to my one pair of Wolverines."

Walter Thomas.
Judson, Indiana

Horsehide through and through!

Two Pairs Lasted 5 Years!

They wear, and wear, and wear!

The letter quoted above is typical of many we receive. The Wolverine Comfort Shoe pictured above is the type of shoe that Mr. Thomas speaks of in his letter. Two pairs have worn him for 5 years. His neighbors have worn out three pairs of other makes while he was wearing a pair of these shoes.

This long life of Wolverine shoes is due to the fact that Wolverine shoes are made of horsehide, through and through. The only shoe we know of that is so made. Horsehide is the toughest fibred leather by test. We tan it by our own process to the softness of velvet. Making work shoes is our specialty. We make nothing else. And we make all Wolverine shoes of horsehide. So they wear, and wear, and wear. Horsehide, tanned our way, is not only soft as calfskin, but it stays soft, even after wetting. It dries out soft. The Comfort Shoe is a light, flexible shoe made especially for harvest field work, and for shop work. It is not made for wet weather. It will give you a maximum of comfort and satisfaction.

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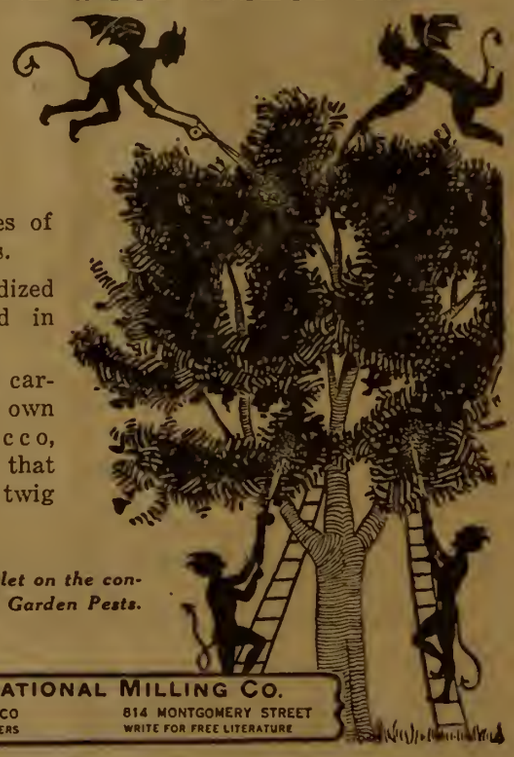

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Exploding Poultry Theories

(Continued From Page 17)

well known axiom. Another is: "The late moulters are the best layers." One breeder says, "Give the fowls a rest and cause a moult in the spring when eggs are cheap and the lights turned off. This means only a partial moult in the autumn with less loss of time when eggs are higher."

All these theories are logical, but when the cautious investigator has heard these and many more, which shall he accept as the best promoter of a padded pocket book?

The generally-accepted theory, at any rate, is that fowls should be rushed through the moult in order to return to laying as soon as possible, because a moult has been associated with a resultant drop in egg production.

Now, however, many poultrymen are holding up their egg production during the moult simply by lessening the strain on the fowl. Instead of hurrying up the process, they are trying to cause the hens to pass through a gradual moulting period, "a feather at a time," as it is termed.

A NEW ANGLE

A new angle of this theory is advanced by J. P. Morgan, a Washington poultryman, who says "unlimited range" is a feature in building up a strain that lays from 35 to 66 2-3 per cent during the moult. A number of his hens have layed at the 66 2-3 per cent clip while in full moult.

Yet—while "unlimited range" may be a feature in one case, I feel sure that when a gradual moult is practiced, even this feature will be found unnecessary, for fowls like human beings, adapt themselves quickly to changed environment.

Chicks raised in brooder houses without yard space grow as fast as others kept in a field with a hen—and later lay as well. Hens raised in one climate and shipped to another soon settle down and lay as well as ever.

Select three or four successful poultrymen of your community—I dare say no two use the same methods. They have different types of houses; one advocates yard space and another does not; one feeds no wheat, another uses the same grain mixture the year round; the next may insist that a variety of feed is absolutely essential.

CHOICE OF BREEDS

The same facts apply in the selection of a breed. Each of these poultrymen may be engaged primarily in egg production. Yet one may use Leghorns, another Anconas, and another Orpingtons. One may hatch and brood his pullets, while another buys baby chicks.

My purpose in calling attention to these different methods is to show the great adaptability of the fowl. In some cases, we might say that a poultryman succeeds *in spite* of and not *because of* his methods. It is this very characteristic — the adaptability of poultry—that will be used further to develop the attribute of laying through a gradual moult.

Is the Hogan System a Fallacy?

ONE man, Walter Hogan, developed a system of selecting laying hens and culling out the "boarders." The popularity of this system, as described in his writings, has been world wide and has made him famous.

But it had its vogue before trap nests were commonly used. Now, the general use of the trap nest seems to show the fallacy of Hogan's ideas in many cases, for on some of the larger Leghorn ranches of Southern California, hens have been weeded out after a few months of failing to make good in the trap nests, their measurements checked up, and their actual trap nest records compared with the estimated records based on the Hogan system. *In many cases, a vast difference was found.*

One hen, however, which it was predicted would lay 100 eggs during her first year, layed twice as many as expected! But as frequently, the comparison has shown the other extreme. *At Hollywood Farms, a large commercial poultry plant, it is said the Hogan system has been abandoned because of the wide variance shown by such tests.*

Apparently, then, trap nesting is the only practicable means of determining the production of hens.

What of Line Breeding?

IN THE charts published in all the old reliable poultry manuals it was pointed out that a strain "could be developed only by means of line breeding." In developing better fowls, therefore, it was deemed best always to keep the blood pure by not crossing with another strain. If new blood was added, it was from the parent strain. *Yet the afore-mentioned Hollywood Farms carry the blood of four Leghorn families.*

The Tancred strain and others have more than one origin and each has become famous for egg production. In another case, a successful poultryman has buildt up a one-family strain, using no outside blood. By trapnesting for a number of years, he has increased egg production somewhat, but last spring he hatched many deformed and sickly chicks, his customers reporting similar experiences. It was a case of breeding too closely.

Walter Hogan ("Himself") and Some of His Prize Stock

Has the White Leghorn Lost Its Egg Laurels?

FOR 40 years, the most wide-raised breed for egg production and today the most popular in America

The White Leghorn is losing its prestige as an egg producer.

I dare say there are 10 White Leghorns to one of any other breed—yet frequently one hears of astounding records made by others. The Anconas, for example, have given some astonishing yields although they have been bred for eggs only a few years as compared with the Leghorns. The Rhode Islands, too, are forging to the front. The Rocks and Orpingtons also are infringing upon the sacred rights of the White Leghorn and in addition are much more valuable for meat.

I believe the Leghorns soon will be surpassed in popularity by the dual purpose breeds. True the Leghorns have official egg records of 330 and 336 for a year, yet the Orpingtons have official records of 339 and 343 and when the Orpingtons are marketed, one hen weighs nearly as much as two White Leghorns, while the Orpington loses a smaller percentage of weight in dressing!

COMPARISON OF BREEDS

An Inglewood poultryman who prides himself on the accuracy of his cost accounts and production records, keeps both Leghorns and Rhode Island Reds. He asserts the Reds lay almost as many eggs as the Leghorns, eat about the same quantity, and when marketed, more than make up any difference, by their weight and quality of meat.

A Gardena hatchery owner who hatches Leghorns, Anconas, Rocks and Reds, says that the Leghorns produce more cripples and defectives than any other breed. The Leghorns, in fact, no longer hold the single hen egg record either for one year or for a life time, and cannot even be considered seriously for meat. They not only weigh less than the others, but the market price per pound is lower.

Considering all these important facts, can we not predict that the crown of popularity will be taken from the Leghorn and given to a dual purpose breed?

The methods of poultrymen change continually—with improvement as the watchword. From the advertising to the cleaning of the houses, new and better ideas are being developed. *Some day incubators may be heated, not with hot water or kerosene or gas, or even electricity—but with radium.* Who knows?—V. O. Hansen.

Bert Kay's Poultry Pointers

BROTHER Poultrymen: What are you doing to help your chickens this time of year? Have you planted your kale, barley, or other green feed? Are you getting the cabbage ready? In the Petaluma district we were late with our green crops this year owing to the wet season, but I did throw out some barley seed in one of my yards, and it has made nearly 12 inches growth.

There are many things to be done, but I note that few of my neighbors are employing as much help as they did this time last year. I think it is because egg prices are so low. In fact, many of the poultrymen are beginning to worry on this account. It does not make us feel any too good but I cannot feel there is any real cause for worry.

Let us compare egg prices with the steel market. Instead of watching the price of finished steel, we consider the market value of pig iron. Similarly with poultry, one should watch the feed market rather than the egg market. With feed prices going up naturally eggs will have to advance in price; at least, that was the story during the war.

United effort in all districts through our organizations or the egg exchanges, should be put forth to bring the price up to a reasonable level as compared with the cost of feed. In Petaluma I note the Poultry Producers of Central California (the egg marketing organization of the farmers) already is placing eggs in storage. In other words, an artificial scarcity is expected to improve the market value. And thereby hangs a tale!

Last year on my way East to call on the old folks I stopped off in Chicago to have a look at the Egg Exchange to see how they "did it." Finding that I was from Petaluma the officials asked me to tell them something about our methods in Petaluma, and what I thought about the egg market at that time. This is what I told them, and I am sure it has a little bearing on the present conditions and low prices of eggs.

"You see we in Petaluma watch the prices pretty closely, being in the [illegible] business of producing eggs; in fact, our whole existence depends upon them. I notice you are buying eggs now (at that time it was March the 6th) at thirty-five, thirty-six and [illegible] at thirty-four. But I think you are all wrong, because, you know, eggs are to be lower. The signs are for [illegible] per eggs everywhere. Right out in California, they are lower than they have been for years, while the production all over the country is greater than it has been in years. On account of the open winter everywhere it looks as though they will go down to twenty cents or a little more."

Well, the result of it was that when I finished my talk they told me I was "[illegible]," in other words, pessimistic. [illegible] show them I was right (and you [illegible] know I was) eggs went [illegible] the prices I said they would [illegible] with the consequence that those [illegible] bought at thirty-five and [illegible] of money this last winter and had to sell them at a fearful sacrifice.

On reaching the New York market, where they sell nearly all of our Petaluma eggs, I found that, about the time I was ready to go home, there were nearly 2,000,000 cases of eggs in storage, or double the amount in storage the same time the year before. Some of the egg men in New York predicted that eggs would be peddled in the streets before the winter was over. And to tell the truth they were.

On reaching Chicago I couldn't but say to the Chicago egg men, "I told you so." The result was that the Exchange asked me to tell them what I thought would happen this last winter, and I told them just as it did happen. Eggs went up to 78 cents in San Francisco one day and then went back. I noticed the bunch in Chicago listened to me with closer attention than formerly. And when I told them that eggs would not go higher than 60 cents last winter, they listened even more carefully. The answer was that they didn't go much higher. Only one week did they go over the 60 cents mark.

Future Seems Clear

AFTER my talk, some of the Chicago men buttonholed me and asked what I thought of this coming spring and I told them then as I am going to tell you now, that eggs would go down fairly low this spring but that the bottom would not fall out of the egg market, although it might make us all a little "scary." And to my mind that is the truth! Eggs are down now as far as they will go, but with a colder winter throughout the Middle West and East, there would be a tightening of the egg market to our advantage. And I am sure eggs are lower than they will possibly be at any other time this year.

There is only one condition that would upset my reasoning, and that is, if all the poultrymen over the United States have increased their flocks, it is likely to make "hard sledding" for some of us for a while. The hard winter and spring that in most cases is still prevailing in the East will help us out.

Of course, if there is going to be over-production, there is only one answer as to remedy—we poultrymen of America will have to start advertising eggs. People have got out of the egg-eating habit and we will have to start them all over again. That's the answer!

So don't worry neighbor! Do your work, start cleaning your houses, plough your yards, sow your barley, plant your kale or cabbage, watch your hens and we will all be better off at the end of the year. It's work that counts, anyway!

Something to Think About

I NOTE that one of the my neighbors has become enthused over making

(Continued on Page 34)

flavor

Flavor is *everything* in chocolate. Yet flavor is a spirited, "runaway" thing. Constant "watch" must be held over it. So much do we think of the flavor of Ghirardelli's Ground Chocolate that not only do we watch it carefully in the blending—but we pack it only *in cans* to safeguard it every step of the way. That's why Ghirardelli's protects and preserves its flavor until the last spoonful is used.

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In 1921 alone, 450,000 new poles were placed—enough to make a telephone line from New York to Hong Kong. The aerial wire put into service in the same year, 835,000 miles in all, is enough to string 60 wires on such a telephone line.

1,875,000 miles of wire, enclosed in 1,500 miles of cable, were added to underground and submarine lines in 1921. New underground duct totaling 11,000,000 feet was constructed, this representing approximately 300 miles of subway. 69 new central office buildings and important additions were completed or in progress, and new switchboards with a capacity of many thousands of connections were installed.

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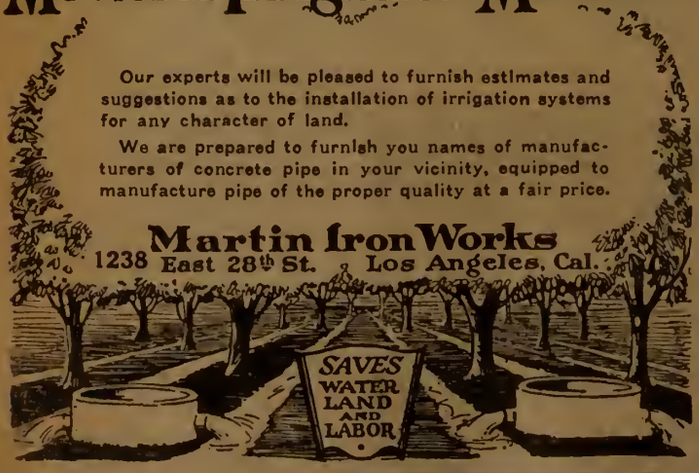

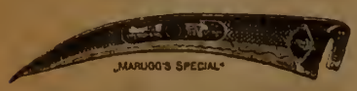

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Timely Tractor Tracts

Chatty Facts and Forecasts Concerning Power Farming

By Walter H. Gardner

CONTRIBUTING EDITOR OF ORCHARD AND FARM

Back in 1910, When We Were Fondly ignorant of vitamines and self-starters, before tractors, sub-soilers and radio concerts were born, the value of California farm lands (including buildings) was $51 an acre. By the time of the 1920 census this had increased to $104! And today there are 25,000 tractors in the State. Is not the connection clear? Those twenty-five thousand tractors are roughly equivalent to 200,000 horses.

W. H. Gardner

In 1910 About One-tenth of the Crops were grown on land irrigated by electricity; in 1920 a full third were grown by power pumping. And the value of the crops increased 200 per cent. More evidence of the importance of power.

Yet It Isn't So Much the Lower Costs of electrical and gasoline power, as compared to farm animals, that have induced this marvelous development of the decade—but their convenience. No conceivable inducement of high crop prices could have persuaded the rancher to undertake equal expansion if it had entailed such a burden of harness and horse flesh and happy-go-lucky helpers. Nor would the slow inefficiency of Maud and Jerry have permitted equal growth—there just wouldn't have been time.

"Saved Time" and "Convenience" Mean About the Same Thing. Relief from the dreary and endless drudgery of dawn to twilight chores is one of the greatest factors in making the California farmer a happy, intelligent citizen, with broad acres, a spacious home, a motor car and a family that hold little desire for the more frenzied pleasures of the city.

It Is Not True that the "saved time" has been devoted entirely to other chores or to the mere planting and harvesting of more acres! Most of it has been spent in education and enlightenment, in pleasure and friendly communion, in travel and the exchange of ideas. And such an attractive existence has brought better and broader men to the farms—the sort of men who produce more in the same time on the same acreage.

A Life of Convenience and Pleasure is the lot of the California rancher of 1922! The motion picture brings the theater to the smaller towns—and the motor car brings the rancher to that theater. There are no more barren evenings. The electric rock crusher and the electric concrete mixer have made ten thousand miles of highway that make an hour mean twenty-five miles of travel instead of six. No one stays home to feed the horses in the summer; the tractor is locked in the shed and forgotten during long weeks at the beach or in the mountains. And the farm-wife, with an electric washer, an electric range and an electric fan, has the time and the health to enjoy herself.

A Fanciful Idea? No, It Is the Ungarnished Truth that the new wealth and tremendous growth of agricultural California hinge on the hours of pleasure and relaxation that the tractor, the automobile, the "gas" engine and the electric motor make possible—not on more minutes of productive effort. "There's a time-saving stunt!" you say—yet are you always striving to save time for more work? Answer the question fairly!

This Same Thing Has Been True Throughout the United States—yet scarcely to the same degree. It isn't true in New England! There the smaller and rockier farms do not invite the tractor. Despite the fact that our school books emphasized the power resources of the North Atlantic States and told how Southern cotton must ever be shipped North, where the mills could operate more cheaply, the Easterner pays just twice the cost per k.w. hour for electric power that the Westerner is charged!

The Average Citizen on the Pacific Coast uses two and one-half times as much electricity as his Eastern brother—and six times the amount of electricity that is generated by water power. And he has available for his future needs twenty-two times as much of that sort of energy as the less favored inhabitants of the rest of the country. No wonder so many Easterners are moving to California—and all the others wishing that they might do so, too!

On the Wider Use of Tractors and the development of the turbulent forces of the mountain streams depend the great expansion of the years to come. Up in the hills the downward plunging water yields up to the turbines a force which, when transmitted to the valley, serves to lift the same water—virtually "by its boot-straps"—over the banks of the sluggish rivers to the waiting orchards and fields. And the farmer of today rises late, throws the switch of his pumping plant, cranks his tractor—and, with a big day's work well done arrives at a bath and a clean collar well before dinner time!

It Is Well That the Existing Scheme of Things wisely provides a low cost of electric power for the rancher. He

Results of Subsoiling in a San Joaquin County Vineyard

uses 2.4 times as much as his brother east of the Rockies—but he pays only 1.8 times as much. Let the cities bear the burden, for the cities can prosper only as the farmer prospers. Man must eat! And so the slogan, "Power on the Farm," means "Down With Drudgery!" It means greater wealth, more time in which to enjoy that wealth, and an age when living on the farm is LIVING, and not merely existing!

"I'll Buy a Tractor, a chisel, a subsoiler and a leveling scraper; I'll subsoil the entire 160 acres of vineyard; I'll relevel it all and reset missing vines—if you'll increase my crop share 2½ per cent!" So declared a San Joaquin tenant farmer to the owner of 160 acres of Thompson seedless grapes. Two and one-half per cent! It didn't seem to ring true as a business proposition, for the tenant was alone promising to buy some $6000 worth of equipment, not to consider the cost of subsoiling. And the landlord, a busy city dweller, gave a curt refusal. But all this happened over a year ago, and recently the landlord reviewed the whole proposition, as well as the history of the vineyard. Farmed carelessly in past years, it had yielded about 150 tons. Last year a light tractor, pulling a plow as deep as it could, boosted the production to 250 tons! And the tenant figured that a heavy tractor and subsoiler would put the yield well over 300 tons. The 40 per cent of the greater crop, which represented the tenants' share, added to the 2½ per cent of the total crop, he figured, soon would offset the proposed investment in power equipment. This year the landlord saw the light of reason—and soon we shall report the results of this particular plan for getting more work out of lazy acres.

One Owner Stood Idly by and watched a hired mechanic do some expert work on his motor. After the service man had left he went to work on the tracks himself. His tractor sense (modern for horse sense) should have suggested doing both jobs at the same time! He could have saved a dozen golden hours of invaluable plowing time.

A Trip Through the Great Agricultural Valleys of the State recently revealed to the writer a tone of healthy optimism. Ranchers expect good crops and believe there will be good prices. Rainfall has been bountiful. And it matters little where one drives—one need only stop the automobile to hear some nearby tractor roaring away at the urgent tasks of a late spring!

"Too Wet to Work!"—and one rancher shook his head in disgust. Yet a scant mile away on similar soil we observed on that afternoon of March 30th, a tractor had been busily at work for six weeks. It was starting for a third time over 300 acres of orchard; and it certainly had done a fine job!

"I Don't Believe in Power on the Farm!" flatly declared one horse owner to a tractor salesman. Yet that rancher crawled out of a nightshirt that had been washed in an electric washer, harnessed his team by electric light, ate breakfast toast made on an electric toaster, owned two automobiles and an irrigating pump direct-connected to an electric motor! Some day he will recognize that the tractor manufacturer can confer on him benefits similar to those he has enjoyed from the power companies!

The First Job of Deep Plowing mightily pleased an orchardist near Fullerton! Three inches in depth had always been the extent of cultivation in that old orchard, and when the trees were put down nine inches many of the tiny feed-roots were cut. The trees languished—but only for a while. Then they took on new life and the biggest crop in years rewarded the more thorough work.

"Neglected Frog-in-the-Throat May [illegible] on consumption in a man—a [illegible] frog-in-the-motor will [illegible] consumption of oil and gasoline in a tractor!" L. N. Bacon, who [illegible] work near Van Nuys with a 12 H.P. tractor, believes in fixing things before they break. "I owe my three years of success in this business to the care I take of my machine when I am not using it," declares Mr. Bacon. "And recently it ran for twenty-three hours a day for twenty days and nights without mishap or delay of any kind. It pulled an eight-foot heavy double-disc and a nine-foot spike tooth harrow!" It always pleases to hear of success in the difficult field of "tractor contracting," for it bespeaks a good farmer, a better mechanic, a fine business man—and a mighty good collector!

There Are Never Enough Good Mechanics to go around! If you find the right man cherish him and keep him. There are too many "jack-knife mechanics" and "whistle listeners"—to quote some of the more polite terms. We recently heard of a man who was "laid off" and spent his last hour loosening a dozen bolts on the tractor—with results that may be guessed. Yet we also heard of another who had trouble in finding his way to an outlying machine in a far corner of the county, but who finally started work at three in the afternoon and finished the job at one in the morning—for, as he said, "It was my fault that I got lost and the owner wanted to work the next day!" Would there were more such trees in the forest!

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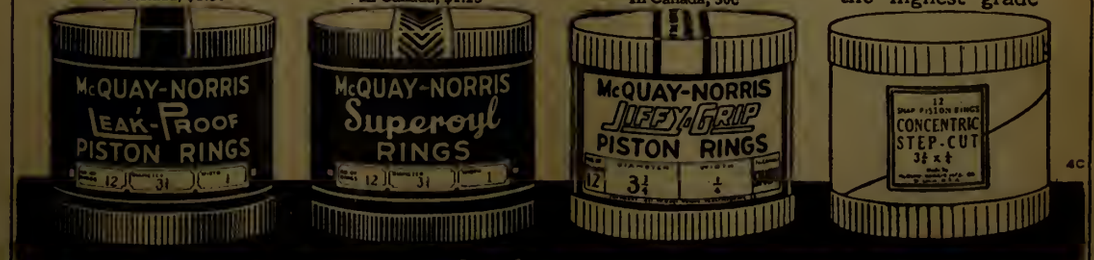

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Statement of the Ownership, Management, Circulation, Etc., Required by the Act of Congress of August 24, 1912, OF

ORCHARD *and* FARM

Published Monthly at Los Angeles, California FOR APRIL 1, 1922

STATE OF CALIFORNIA
COUNTY OF LOS ANGELES, } SS

Before me, a Notary Public in and for the State and County aforesaid, personally appeared James C. Knollin, who, having been duly sworn, according to law, deposes and says that he is the Editor of Orchard and Farm and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in Section 443, Postal Laws and Regulations, printed on the reverec side of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor and business managers are:

Name of	Postoffice Address
Publisher, Country Life Pub. Co.	Los Angeles, Cal.
Editor, James C. Knollin	Los Angeles, Cal.
Managing Editor, James C. Knollin	Los Angeles, Cal.
Business Manager, G. G. Young	Los Angeles, Cal.

2. That the owners are: (Give names and addresses of individual owners, or, if a corporation, give its name and the names and addresses of stockholders owning or holding 1 per cent or more of the total amount of stock.)

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Names and addresses of stockholders owning or holding 1 per cent or more of the total amount of stock: None other than

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3. That the known bondholders, mortgagees and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages or other securities are: (If there are none, so state.)

None

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear on the books of the company, but also, in cases where the stockholders or security holders appear upon the books of the company as trustees or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting is given; also that the said two paragraphs contain certain statements embracing affiant's full knowledge and belief as to the circumstances and conditions which stockholders and security holders who do not appear upon the books of the company as trustees hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association or corporation has any interest, direct or indirect, in the said stock, bonds or other securities than as so stated by him.

5. That the average number of copies of each issue of this publication sold or distributed through the mails or otherwise to paid subscribers during the six months preceding the date shown above is ———. (This information is required from daily publications only.)

(Signed) JAS. C. KNOLLIN, Managing Editor.

Sworn to and subscribed before me this 23rd day of March, 1922.

(Seal) H. O. HUNTER, Notary Public.

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BOYS AND GIRLS Their Work and Play

Just Ben---Adventures From the Autobiography of a Dog

By Jean Jerome

As I lie here in the soft, warm sunshine I find myself dreaming of my younger days. Then I was just an awkward puppy, and the act of burying a juicy bone was one of the happiest events in a day, while chasing the neighbor's lanky, yellow cat, was my most delightful recreation. How I loathed that cat!

But there I go, traveling ahead of my story! The turning point in my life occurred upon a raw, rainy day when my master, who had very little kindness in his heart, drove into the yard of a customer to seek shelter from the rain.

I was brought into the house wrapped in an old coat, for I had been very cold and shivery there in the open wagon, being but a mite of a pup two weeks old, and an orphan.

Before my master left, I had become a member of this family and was hugged tightly in the arms of a chubby, yellow-haired boy who had begged for me so hard that my master had consented (at the sight of a five dollar bill) to give me up, although reluctantly, for he knew what splendid watchdogs my forefathers had been.

But I was happy, for I felt I should find love and protection with these people, and how warm and cozy I was in my box that night in the big, pleasant kitchen.

The next day I had the opportunity really to become acquainted with my new master. He had the kindest face I think I ever have seen. I was ready to give up my life for him and the little boy, whose name I soon learned was Bobby Vernon.

My first training day soon arrived, and each morning thereafter, I had to spend an hour learning my duties as a watch dog, as well as some tricks. I will admit I know quite a few of the best circus tricks, too.

One of the first things I was taught to do was to watch over Bobby. One day a few years later, Bobby and I were playing in the woods a number of miles from home, and while he was attempting to climb a tree, Bobby's foot slipped and he fell to the ground, breaking his leg. He was in great pain, and for a moment I was frantic.

Then I darted off for his father. But I could not make him understand at first, although I barked and jumped up on him and ran off towards the woods and back again. If people could only understand that when we act so there is something we wish to say in our dog-fashion!

Finally, I took his coat sleeve in my teeth and tried to pull him towards the road. At last he understood that I wanted him to follow me, and I led him to where Bobby lay.

My master also taught me to guard his automobile. Of course, I would not want you to think I was a vicious dog, but perhaps my curious appearance, since I had the markings of a brindle bull dog, and the head and ears of a terrier, made me somewhat forbidding.

No one ever came very near the car after seeing me. However, one day my master parked at the curb of a busy downtown street. He was gone a very long time. I noticed a man in a dark suit with many silver buttons down the front of his coat, and a big bright star on his breast, approach the car with a slip of paper in his hand.

I barked and tried to look ferocious. The man stepped back for a second, then came up again. He was persistent, I thought, so I showed my teeth and growled. We repeated this maneuver a number of times, and finally my fighting blood was aroused.

I suppose I very plainly showed him he had better turn around and depart, for at last he gave up the attempt to molest the car.

I tried to tell my master all about it when he finally came back, but of course he could not understand me. Later I learned that had the man fastened that slip of paper on the car, my master would have had to go to court, and pay a sum of money. How glad I am that I showed all my teeth and growled my fiercest!

I am quite an old dog now, and each year I have learned to love my master and Bobby more. In the evenings I am happiest when I can curl up at their feet, or sit with my head on Bobby's knee, and have him stroke me and call me, "good old Ben."

A New Contest—Cash Prizes for Boys and Girls

Jean Jerome's story above was written especially for our little friends. We all love to read about animals, particularly when their adventures are described from their viewpoint as in the case of "Black Beauty," the wonderful horse, or Olivet's famous dog story, "Bob, Son of Battle."

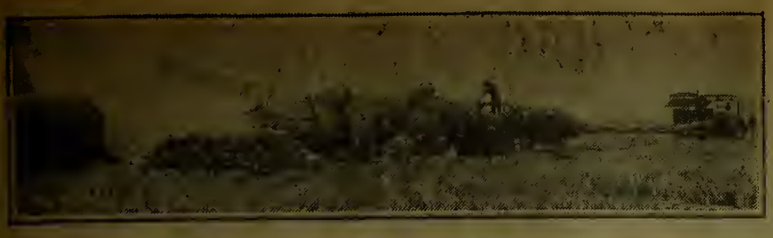
Now, we believe our little readers who love animals (and surely that includes all of them) could put themselves in the places of their pets or wild animal friends and write very interesting stories. We want them to try, and will publish the most absorbing stories submitted, awarding the following prizes:

For the Best Story	$3.00
For the Second Best Story	2.00
For the Third Story	1.00
For the Fourth, Fifth, Sixth and Seventh	.50 each

NOTE CAREFULLY THESE CONDITIONS OF THE CONTEST

(1) Each entry must be accompanied by the writer's full name, age and school grade. (2) No story may exceed 500 words in length. (3) Each story must be written in the first person; that is, as though the story were told by the animal itself. (4) Any animal, pet or wild, may be chosen. (5) All stories must be submitted to the Editor of ORCHARD and FARM before May 15th, but letters postmarked the 15th will be accepted. (6) Any child of any age under 15 may take part, provided some member of the family is a paid subscriber to ORCHARD and FARM. Any reader who is not a member of a subscriber's family may enter by sending an order for one subscription with the story.

Now, "get busy," boys and girls, and use your imaginations. "Play animal" for a time and try to feel the emotions, joys, pains or sorrows that you think an animal must feel. The judges will base their decision upon many different factors, including age, neatness, originality, interest and imagination. Think of what you could buy for $3 or $2! Write your story at once and mail to the Editor of ORCHARD and FARM, 1111 South Broadway, Los Angeles.



How I Select My Farm Hands

An Experienced Rancher Gives Some Pointers on Increasing Labor Efficiency and Avoiding Expensive Mistakes in Choosing Men.

DURING the present period of readjustment in all lines of business, economy has become the watchword in agriculture as well as in other industries.

The farmer, employer of men, whether one or one hundred, should not lose sight of one point, among others; that of selecting carefully his ranch labor. This frequently is passed up or considered too lightly.

An abundance of labor is available now, and indications point to a continuance of this condition. This fact alone would suggest to the employer the advisability of careful selection. During the war many of us had to revise our ideas concerning selection and handling of men, in many cases taking whatever labor we could get and paying exorbitant wages for inefficient service. No doubt many employers have not stopped to realize how different is the present situation.

RETRENCHMENT NECESSARY

The farmer who is continually breaking in new men is carrying a heavy load of overhead cost on his production, and in the face of present day competition must retrench. A new man is a liability until he becomes acquainted. He must know the team or machine he handles, the shortcuts to his work, the "layout" of the fields, and a thousand other details, the ignorance of which will detract materially from his efficiency.

An experience involving loss of time may illustrate the point. A neighbor called a certain rancher by phone at 8 o'clock in the evening and inquired if a man was missing. Upon investigation, he found that a man he had sent on an errand had failed to return. When the man had been "corralled" for the night, he explained he had lost his way and had wandered three miles to a neighboring ranch. Meanwhile, however, parts for an idle machine had been held up and the necessary repair work delayed.

A little care in selection, under present favorable conditions, may repay the employer manyfold for the time required.

Among the different characteristics of man are several strong indications of character. A typical type is the chronic "down-and-outer," who seeks to "sell" himself by means of an appeal to pity rather than true worth.

THE HARD LUCK STORY

He tells you a long story of hard luck; he is "flat broke" (and in many cases he is doomed to remain broke). By his own confession he has not mastered the art of eating and sleeping by his own labor.

He is telling the story of a wastrel—one who lacks thriftiness and industry. His chances of succeeding for his employer where he failed for himself, are very slim.

There are some few, however, who may be mistaken for those of his class. A number of our best ranchmen of today came to their present locations with blankets on their backs. The difference lies in the fact that these men were hardy pioneers from good stock, who asked no quarter of any man. They simply went to work and earned their way to success. Another point of difference lies in the fact that they came to work and stay; the first-mentioned type usually "feeds up" well and moves on.

There is another class—the faithful stayers, or those who are reliable and steady, and save a little of their earnings but just can't forge ahead. Given a place they may make a good, steady "hand" and he may not. He is difficult to choose in any off hand way, but usually will be worth a fair trial.

A third "brand" comes up for consideration. He is one who knows too much, or rather thinks he does, and is unwilling to accept his task as it comes to him. Nothing is done well, which he does not do . A successful rancher is one who is willing to learn; one who profits by his own and his neighbors' successess and failures.

ENTHUSIASM OF YOUTH

Again, however, there is a similar type of man who must not be misjudged and condemned. Well-meaning lads, who have learned farming principally from books, are likely to display impatience. They may cut in on a question or suggestion with, "I know all about it." Impatience in youth however, should not be condemned, for it may be the reflection of a clean mind and body, full of life and vigor, and anxious to tackle the chosen work.

The fourth class includes the man who was a boss mechanic, or labor boss in construction, and is worth ten dollars per day (as he admits). Now, however, he has *condescended* to do ranch labor at two-fifty per day.

He gives the impression that he is doing a favor by working. He is genial and talkative when applying, but all the while there is present beneath the surface, a feeling that the world has cheated him; he pities himself deeply.

Employ such a man and in addition to his name inhabiting your payroll and his countenance the ranch board, he will be an innocent bystander when there is work to be done.

From him you will learn also, beyond a doubt, that the Chinese cook does not quite understand cooking beans, and the coffee is not what it should be and that the biscuits are just plain rotten. You are fortunate if some of your other men do not become dissatisfied before you pay off this fellow!

THE IDEAL FARM HAND

But finally, before the impression is conveyed that there is no satisfactory man, let us consider the one really worth while. How can he be recognized?

He will have a bright eye, and a quick step, and will be young to middle aged with a trace of modesty. He can look you squarely in the eye, however, denoting usually honesty. His quick movements, alert attitude and smile, denote the absence of laziness and the presence of intelligence.

Given a trial, he greets you on the minute with a smile, ready for his day's work. He accepts his program without comment and goes afield happy. There is a song either on his lips or in his heart. His work will be well done, and he will not be the first one back to camp at night.

HOW TO KEEP HIM

When you secure a man of this type and he meets your needs and expectations, recognize his worth before your neighbor takes him from you! Let him know you appreciate his work, always remembering you are fortunate in securing a good man, and that a poor worker is costly at any price.

Justice and recognition of work well done are the two big links in the chain of co-operation of men in this line of work. Strain either of these links and you strain your own reputation as a leader of men—for such the successful employer must be.

A flat scale of wage as adopted by many associations and individual growers in California is unjust both to employer and employe. It discourages the good men and they drop back to the ranks of the average. Remove the possibility of a better wage than is paid poor and medium workmen and frequently the others lose heart in their work and are interested only in holding the job.

Graduate the wage! The straw boss, or the one actually in charge of the men, best can make recommendations as to individual worth. Never lose sight of quality. Poor quality in labor is a double liability; one loses the wages and also is "stuck" for repairs on machinery broken or destroyed.

THE IMPORTANT DETAILS

The foreman, employed at a salary double that of the laborer, cannot take time to "trail" a man, and see that he works all day. You are paying him a superior wage for a superior mental power plant, not for slave-driving. He should help you think, manage and direct. He should know that onions served at the noon meal cause drowsiness during work hours. This and a thousand other details look infinitely small on the surface, but an annual accounting of leakage through such small details is staggering.

A little more thought given to the selection of men may go a long way towards increasing profits and reducing worry. This is an important consideration with most business men and the farmer cannot afford to be less efficient.—D. L. Vasbinder.

Ben Gonnadooit Says

The reason I ain't usin' more space in ORCHARD and FARM this month is thet I didn't get my stuff writ in time. Th' Editor give me a awful pannin'.

In fac', he said if I didn't send somethin' in *pronto*, he'd cancel my contrack!

I have been goin' t' write ev'ry day fer th' past month, but it seems like somethin' allus p'vented. Well, maybe th' Editor will treat me like I do my hired man (when I kin afford one). As long as he puts in five or six hours a day, I don't pay much attention t' what he is doin', figurin' my time is too vallyble t' waste follerin' him up.

Well, I have writ enough to make a showin'. Maybe th' Editor will rush it through an' not notice I ain't said much. Ho-hum! This here literary work sure cuts in to my recreation hours!—BEN GONNADOOIT

(Editor's Note—We shall let him get away with it just once, but after this—watch out, Ben!)

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LISTER MFG. COMPANY Box 727 Clarinda, Iowa

YOUR GARDEN of FLOWERS

by Helen Temple

The Growing of Petunias

THE improvement of petunias during recent years has been due largely to the efforts of a California woman, Mrs. Myrtle Shepherd-Francis.

Through hybridizing she evolved the wonderful seed producing double petunias, but until she discovered the secret of causing the big double petunia to develop seed, their production was an expensive operation.

Mrs. Francis believed in striving for perfection; the perfect double petunia, she reasoned, must produce seed. But it was only after five years of experimental work that she made her discovery. Now, as the result of this work, we have the wonderful, fluted, ruffled and fringed varieties, both doubles and singles. The doubles of the peony-flowered varieties, will produce 25 per cent of perfect reproductions from seed; these often measure seven inches across.

Of the double, seed producing petunias 50 per cent are fringed. She hybridized until she produced colorings and markings famed throughout the floral world. We members of the ORCHARD and FARM family should feel proud to think that a California woman has done all this.

Peony-Flowered, Double Petunias, Hybridized and Grown in the Shepherd-Francis Gardens, Ventura, Calif.

Orders come from all parts of the world for her seeds, and surely we who live in Golden State should set aside a sunny spot in our garden for some of our own beautiful petunias. I will admit that I do not care for the common, small petunias, but the big singles and doubles with the wonderful colorings certainly have found a place among my favorites in the flower kingdom.

Propagating Petunias

IN THE interior regions seed should be sown in February in flats indoors or in the green house or in a hot bed. In May transplant to the open ground. In the semi-tropical regions, where there are no frosts, petunias may be planted outdoors the year around. This year, however, was not frostless even in the warmest districts. Many wonderful gardens at present have a fire-swept appearance as the result of frosts in sections heretofore frostless. With this fact in view, we should delay planting in the coastal and semi-tropical regions outdoors until early spring.

For the seed boxes use sifted leaf mould and sand of equal portions. Settle the earth firmly, then wet with boiling water. Before the soil has become cold, sow the seeds over the surface. Mix sand with the seed, and do not sow too thickly. Try to sow them about an inch apart. Cover very thinly with sifted sand, then place a pane of glass over the box. If the root system shows before the green leaves, sift more sand over them. When the plants have put out leaves, remove the glass to allow them to become "stocky." During the heat of the day, when the propagating boxes are outdoors, cover them with newspapers or a muslin frame.

Do not allow the soil to become dry. Use a whisk-broom to moisten them. The plants are so small that caution is necessary when watering to prevent dislodgment.

The petunia may be transplanted two or three times if necessary before being set out into its permanent bed. The use of small pots is general. Choose the stockier plants when transplanting, unless propagating for doubles; the weaker plants are most likely to produce doubles.

PROPAGATING FROM CUTTINGS

When propagating by means of cuttings, take them in the early fall. Insert in boxes filled with clean sand, place boxes in shade or filtered sunlight and keep moist. When the cuttings show signs of new life, gradually harden them to sunshine and air.

Petunias are not cold weather plants. The first frosts usually kill them. In the frostless sections of the State they often bloom throughout the winter, particularly if they are cut back in August and all old flowers are kept picked from the plant.

Planting Petunias

PETUNIAS do well in the same situation as that used for pansies. When pansies are replanted each year from new seed, the same bed may be used. Quite often the little petunia plants are set out at one side of the pansy, which acts as a natural protector until the little plant "stands on its own." By this time the pansy will have completed its season.

Plant petunias about fifteen inches apart in the open ground. If the soil has not been fertilized for some time, spade under a liberal amount of well rotted barnyard manure. When using commercial fertilizers apply bone meal, fish fertilizer or shell during the fall before planting in spring.

Gypsum changes the composition of a heavy, sticky soil, making it much easier to work and less apt to become sour. Alkali soil will grow flowers of fair quality and quantity when sweetened with gypsum, especially if a "renovator" crop is used.

Petunias will not succeed in the sticky soils. Nitrate of soda acts quickly. It is best to use after the plants are well established and show buds.

REQUIRE GOOD SOIL

Planting in poor soil with no thought toward enriching it is almost a waste of time, for petunias will more than repay for all attention given the soil in which they are planted and proper care afterwards. I have often heard a florist say, "Petunias are one of the most appreciative crops we have. They thank us in a practical manner for every extra item of care we give them."

AS A POT PLANT

After the plants become well established outdoors, the thin-stemmed, small-leaved specimens should be removed. Replace with new plants. When the petunia is used as a pot plant care must be taken to avoid crowding. They will need "feeding" after they begin to bloom. Use liquid

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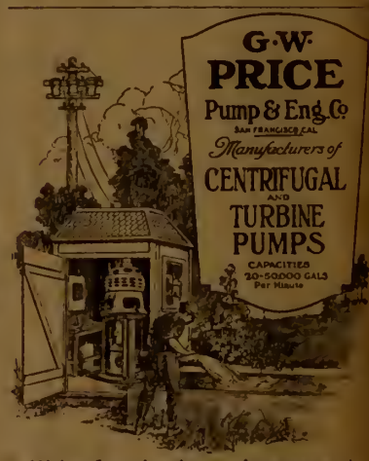

Write for circular and name and address of our nearest agent. 33 Stevenson St., San Francisco, Cal.

BEES

Bee-Keepers can obtain from the Apiary Department of the Diamond Match Co. the finest quality of Bee-Keepers' supplies, including the new Aluminum Combs, at fair prices.

The Apiary Department, which is in charge of experienced Bee-Keepers, is one of the largest of its kind in the United States and maintains a constant excellence of product and unsurpassed service.

Write for catalogue, and, if a beginner, for Cottage Bee-Keeping, which will be promptly mailed free.

THE DIAMOND MATCH CO. APIARY DEPARTMENT CHICO, CALIFORNIA, U. S. A.

...are if possible; if not available use ... commercial fertilizer especially ...d for pot plants.

...window boxes or pot plants, pe... are very effective, but they will ...t succeed unless they are situated ... warm, sunny situation out of a ...ght.

Petunia Varieties

GOOD petunia seed is usually rather expensive. Best results are obtained when a named variety of guaranteed, fresh seed is used. The seed companies advertising in ORCHARD and FARM are reliable; they furnish good seed at reasonable prices.

Helen Temple

The petunias shown in the photograph are the peony - flowered doubles grown by Mrs. Francis of Ventura, Cal. They were prize winners. I can safely recommend them to any one who wants to try something really worth while. The giants of California, ruffled giants, double-fringed and hybrids are all good. A dwarf petunia is also quite popular for edgings and pots. This grows to a height of seven or eight inches.

What to Do in May

MAY usually finds us hurrying up our housework so that we may do the things we wish to do in our gardens. May is an outdoor month when we can plan a lot of garden work. Petunias should be set out. We can choose from all shades of pinks and reds or variegated or pure white. Our "lesson" for this month on petunias works very nicely with the calendar. If it is impossible to raise your own seedlings, purchase a dozen plants from your nurseryman.

OTHER "MAY FLOWERS"

Chrysanthemums do well when set out in May; they are heavy feeders, therefore be sure your soil is rich enough to keep them in good growing condition. Do not set closer than a foot apart. Choose your colors for future effect. I advise the purchase of plants from reliable nurserymen rather than the use of "cuttings" from this neighbor and that.

Shasta daisies, in fact all daisies, do well when planted in May. Forget-me-nots, digitalis, cosmos, nasturtium, salvia, snapdragon, marigold, poppies, scabiosa, salpiglossis, zinnias, asters and centaurea may be planted and transplanted with success this month.

Interior dwellers should plant some quick-growing vines. Cinnamon vines grow quickly and die down in winter to repeat the process year after year. They are bulbous. Then we have other rapid growers, such as the balsam apple, wild cucumber, scarlet runner, balloon vine, hops, moonflower, morning glory, tall nasturtium, gourd and the rapid-growing, climbing roses, such as the climbing ramblers.

Avocado Events

THE California Avocado Association will hold its seventh annual meeting, annual dinner and exhibit of fruit on Friday and Saturday, May 12 and 13, at the Vista del Arroyo Hotel, Pasadena.

The association expects to present at this meeting Wilson Poponoe of the U. S. Department of Africulture, who has recently returned from horticultural explorations in tropical America. Mr. Popenoe will give two addresses, illustrated.

There will be an exhibit of avocado products by the Laboratory of Fruit and Vegetable Chemistry, U. S. D. A., Los Angeles. Visitors are cordially invited.

Complete program and additional information may be obtained from President W. E. Hertlein, Mount Washington, Los Angeles.

Electric Power—

A Servant for the Farmer's Wife

POWER LINES operated by the Pacific Gas and Electric Company, and spreading web-like over much of the state, bring to thousands of farmers' wives the same efficient service that lightens the labors of their city sisters.

Electricity is now the servant of housewives everywhere. Electric washing machines alone have relieved them of a heavy burden. Manufacturers sell these machines on payment plans that are as easy to meet as laundry bills. The power used by an electric washing machine is very low.

What farmer's wife can afford to continue heavy drudgery over wash tubs when such an efficient servant is at hand? What husband would want her to?

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WAGNER'S GIANT WINTER RHUBARB

April and May best time to plant. Should return up to $1000 per acre first year. The California Rhubarb Association could have used the output of 1000 acres this season. Plant now for next Spring's market.

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ISABEL SINCLAIR'S PAGE

For the Woman in the Home

The children whirl around in a ring,
And laugh and sing, and dance and sing;
But the blackbird whistles clear, O clear,
"The Spring, the Spring!"
—J. H. Wheelock.

Dear Friends:

With the coming of spring and the promise of summer "just around the corner," shadows disappear and burdens become lighter.

And why should they not? It is the season of promise; the hope time; the time to plan and to plant. Already the first tiny green shoots are peeping inquisitively through the ground, before long to become straight, sturdy stalks, promising reward in the harvest, for the work given toward their cultivation.

I always have loved the spring for the new hope it spreads over the country and instills in our hearts, the bursting into blossom of the bare gray limbs, so long stretched Heavenward, and the delicate greening of the hills and fields. Without the spring, famine would walk the highways and our hearts would be filled with misery.

Who among us does not want to throw open the windows on the first, warm spring day? And why not open the windows of our own hearts?

Perhaps our neighbor is in need of a cheerful word, or maybe he could be a helpful friend, if we would but stir around and get acquainted. Let us be friends and have friends.

Our lives are broadened only by association, and there is much we could get together and talk about—not merely idle gossip but things of real vital interest to each and every one.

It may be a national conference or the bonus question; it may be bread making, the training of children, or, social work. But through association, our interests develop and broaden and become a force in the world.

And what joy a simple act of kindness will bring to us! The whole world longs for friends, and in every community there are many men and women who want to be friendly and neighborly, who could bring to us the pearl of friendship and to whom, in return, we could take the riches of charitableness.

Sincerely,

Isabel Sinclair

Free Recipe Books

ALL our readers are urged to send for the valuable and helpful recipe books published by the Co-operative Marketing Associations of California.

One of the most interesting is that of the Associated Raisin Growers, Fresno. The California Prune and Apricot Growers' Association, San Jose, also issues recipes and suggestions invaluable to the housewife. Among the most interesting features of the latter organization's recipe book are instructions for using prunes in a variety of dishes, showing that the usual process of stewing is by no means the only method of preparing this delicious fruit.

It is generally agreed that no one can eat too many prunes, as they are considered one of our most healthful foods; the advantage, therefore, of serving them in many different ways is apparent to the housewife who has constantly in mind the health of her family.

The Peach and Fig Growers' Association, Fresno, has collected hundreds of recipes for these fruits.

The California Fruit Growers' Exchange, Los Angeles, issues a helpful list of orange, lemon and grapefruit recipes, while the California Walnut Growers' Association, Los Angeles, also has a domestic science department that publishes a recipe booklet. Every cook should have each of these, as well as the books issued by other marketing organizations, and make use of them regularly. All are sent free upon request. In writing for them, please mention having seen the announcement in ORCHARD and FARM.

A "Peach" of a Spring Suggestion

SPRING has a special significance for the average housewife. It is the period of the year set apart by nature itself for the cleaning and freshening of everything. Therefore, housecleaning and the customary renovations are but manifestations of the spring spirit.

The human body also has its housecleaning and must be fortified against the colds that are rampant in this transitory period between winter and summer.

Fruit always has been nature's greatest gift to the human family for rejuvenating the system. For untold ages, man has dried the surplus fruit supply to carry him over the winter; in fact, dried fruit is one of the world's oldest commodities. The housewife in her role of conserver has learned that a supply of fruit for spring consumption is invaluable.

Modern methods of fruit drying have made it possible by the simple addition of water, to supply the family with what is practically fresh fruit, and modern cookery has supplied the variations that make it attractive. One of the most generally used spring fruits is the California peach. There are many ways of combining the dried fruit with other foods such as milk, eggs and butter, making a perfect vitamine combination, particularly valuable at this time of the year.

Peach sauce, of course, leads the list in popularity, the use of the dried peaches for slicing and serving with cream being widespread. Softened over night and cooked with sufficient sugar to suit the taste, when cool they make a delicious combination with the dry cereals and cream. Another attractive recipe is:

Peach Rice Sundae—Wash 10 Blue Ribbon Peaches and soak them over night. In the morning stew peaches in same water. Pile one and one-half cups cooked rice in center of large plate. Place the cooked peaches around the edge of rice, inverted. Before serving, pour peach juice over rice. Fill peaches with cream and sprinkle nuts over all.

Corn Pudding

1 can corn	⅛ teaspoonful white pepper
1 cup milk	2 teaspoonfuls baking powder
4 tablespoons flour	2 eggs
¼ teaspoonful salt	

Chop corn, add milk, mix well. Sift flour, salt, pepper and baking powder together, and add to corn mixture; add the yolks which have been beaten with egg beater until thick, then cut and fold in the stiffly beaten egg whites. Put in buttered baking dish and bake 30 to 45 minutes in medium oven.

Cheese Loaf

We have meat loaf and vegetable loaf, but we have also a cheese loaf. Grate an onion and then boil for five minutes in a saucepan with one cup of milk and one tablespoonful of butter. To this add one cup grated cheese, one cup bread crumbs, one cup ground walnuts, one tablespoon lemon juice and salt and pepper to taste. Bake 20 minutes in a well-buttered and floured pan.

Getting Rid of Ants

ASK any number of women to make up a list of the greatest problems with which the housewife has to contend, and probably not a single one would fail to include that exasperating little insect—the ant.

Furthermore, it appears to be a fact that a surprisingly large number of women who are efficient in most household matters, appear to feel that the ant nuisance is something which must be borne in silence.

Nothing, however, could be farther from the fact, because the extermination of ants is now a comparatively simple matter, as a remedy is available that will not only drive ants out of a house or store with a rush, but also will make them stay out. In fact, it appears to have an almost supernatural effect on them as they shun with uncanny dread the place where the paste has been aplied.

The Household Editor will be glad to supply instructions regarding this paste to any reader who inquires.

Here Are Winners in Prize Letter Contest

THE Household Editor, assisted by a committee of three, including one man and two women, acted as a judge in selecting the winners in ORCHARD and FARM'S latest letter contest. The subject, as announced in the April number was "What Can Be Done to Keep the Children on the Farm?"

Unfortunately, space is not available this month to publish any of the letters, but a number of them will appear in the June issue.

The prize winners, however, are announced, and checks are being mailed promptly as follows:

FIRST PRIZE, $10—Mrs. Lydia F. Michener, Box 171-C, El Monte, Cal.

SECOND PRIZE, $5—Miss Ida I. Hill, Tuolumne, Cal.

THIRD PRIZE, $3—Mrs. W. A. Adams, Clio, Plumas County, Cal.

A number of other communications, whose writers were not awarded prizes for various reasons, nevertheless were so interesting that it was recommended they be accorded honorable mention. Such letters were received from the following:

Mrs. J. W. Dowell, Route "A," Box 220, Laton, Cal.
Mrs. E. L. Ingraham, Route 1, Orland, Cal.
Mrs. A. J. Caldwell, 2117 "B" Street, Vancouver, Wash.
Mrs. Croalls, Aromas, Cal.
Mrs. M. Rist, Box 261, Calistoga, Cal.
Mrs. Jennie Westerberg, Box 628, Fort Bragg, Cal.
Mrs. Gertrude M. Johnson, Route A, Box 6, Rocklin, Cal.
Mrs. J. Emerson, Box 272, Auburn, Cal.
Mrs. Myrtle Gralto, 117-D Fries Avenue, Wilmington, Cal.

Watch for the announcement of a new contest—full details in the June issue. We thank and congratulate those who took part in the April contest, extending our good wishes, as well, to those who were not "in the money."

Raisins for Summer

THE appeal of raisins recently has become so universal that it is not surprising to note the appearance of a new raisin delight, this time a summer delicacy, cool and delicious.

What could be more tempting on a warm, oppressive day than a delicious dish of ice cream, made with luscious raisins? An energizing food—just the thing for summer weather, when the blood is constantly in need of revitalization.

We all feel tired and listless on such days, when a cooling dish is only a temporary relief. But combined with a food containing that natural iron vital to the system, a delicious dish of raisin ice cream is indeed a timely suggestion.

RAISIN ICE CREAM

Soak until plump 1 cup Sun-Maid seeded raisins with 1 tablespoon lemon juice in 2 cups water. Then simmer slowly, while closely covered, until raisins are tender, and ½ cup water remains. Dissolve 1 tablespoon cornstarch with few grains salt in 4 tablespoons cold water; add to the raisins, cook until clear, being careful not to crush raisins while stirring. Add ¾ cup sugar remove from fire, keep covered and let it get cold. Whip 1¼ cups heavy cream until stiff. Then fold raisins with 1 teaspoon vanilla into the cream and freeze.

Little Helps

One level tablespoonful of flour will thicken one cup of liquid for soup.

Two level tablespoonfuls of flour will thicken one cup of liquid for gravy.

Three level tablespoonfuls of browned flour will thicken one cup liquid for gravy.

Use one-half as much cornstarch as you would of flour for thickening.

Use two level tablespoonfuls of cornstarch to one cup of liquid for pudding.

Use two eggs to one cup milk for stiff custard.

Use one tablespoonful granulated gelatino for one pint liquid if cooled on ice.

Use two level teaspoonfuls baking powder to one cup flour for muffins.

Use one egg to one cup milk for soft custard.

If well-beaten eggs are used in cake, leave out one-half teaspoonful baking powder for each egg.

Use one-half level teaspoonful soda for each cup sour milk.

Cleaning Pots and Pans

WHEN it is necessary to scour metal, whiting as scouring substance will give the metals the least wear. The acid of foods such as rhubarb, tomatoes, lemons, or oranges often will remove discolorations.

Whiting moistened with a food acid such as mentioned above, is good for cleaning aluminum. Washing soda should not be used, as the alkali it contains darkens the metal.

A weak soda solution will remove grease from brass, and whiting and a dilute acid, will remove tarnish; brass may be polished with rotten stone and sweet oil, and dried with a soft cloth. Copper may be cleaned in the same way.

DRESSMAKER RECOMMENDS THEM

Have used a number of ORCHARD and FARM patterns and like them better and have better success than with the patterns sold at 35c.—Mrs. Croalls, Aromas, Calif.

Note—Compare these patterns, as to price and style, with those obtainable elsewhere!

PRETTY COSTUMES
Chosen by Isabel Sinclair

These costumes are simple and can be made readily by the home dressmaker from the instructions provided. Send 15 cents in silver or stamps for each pattern desired. Address Pattern Department, Orchard and Farm, 1111 South Broadway, Los Angeles. Give full name and address.

3973—Lady's Dress

Cut in 6 sizes: 34, 36, 38, 40, 42 and 44 inches bust measure. To make as illustrated requires 3⅝ yards of figured material 38 inches wide and 2⅜ yards of plain material 36 inches wide. The width at the foot is about 2 yards. Price 15 cents.

3959—Girl's Dress

Cut in 4 sizes: 6, 8, 10 and 12 years. A 10 year size requires 2¾ yards of 40-inch material. Price 15 cents.

3965—Misses' Dress

Cut in 3 sizes: 16, 18 and 20 years. An 18 year size requires 7⅞ yards of 36-inch material. The width at the foot is about 2 yards. Price 15 cents.

3975—Lady's House Dress

Cut in 7 sizes 34, 38, 38, 40, 42, 44 and 46 inches bust measure. A 38-inch size requires 4½ yards of 40-inch material. The width at the foot is 2½ yards. Price 15 cents.

3436—Boy's Blouse and Trousers

Cut in 5 sizes 8, 8, 10, 12 and 14 years. A 10 year size requires 1⅞ yards of 38-inch material for the blouse and 1⅝ yards for knickerbockers. Price 15 cents.

3971—Lady's Apron Dress

Cut in 4 sizes: Small, 34-36; medium, 38-40; large, 42-44; extra large, 48-48 inches bust measure. A medium size requires 4 yards of 36-inch material. The width at the foot is about 2 yards. Price 15 cents.

3234—A New Play Apron

Cut in 5 sizes 1, 2, 3, 4 and 5 years. A 4 year size requires 1½ yards of 36-inch material. Price 15 cents.

3646—Girl's Dress

Cut in 4 sizes: 4, 6, 8 and 10 years. An 8 year size requires 3½ yards of 27-inch material. Price 15 cents.

3945—A Smart Top Garment

Cut in 6 sizes: 34, 36, 38, 40, 42 and 44 inches bust measure. A 38-inch size requires 3⅛ yards of 44-inch material for the jacket and ⅞ yard for the cape. Price 15 cents.

CATALOG NOTICE

Send 5 cents in silver or stamps for our up-to-date spring and summer, 1922 catalog, containing over 500 designs of ladies', misses' and children's patterns, a concise and comprehensive article on dressmaking; also "Some Points for the Needle," illustrating 30 of the various simple stitches. All valuable hints to the home dressmaker.

Use Coupon in Ordering Patterns

Herewith find.....cents, for which send me the following patterns:

Pattern No. ..... Size.....

Pattern No..... Size.....

Pattern No..... Size.....

Be sure to give number and size. Send orders for patterns to ORCHARD and FARM, 1111 South Broadway, Los Angeles. Be sure to sign your name and address below.

Name .....

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Address .....

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(Write numbers of additional patterns below)

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Here's a chance to earn a Conow Burner for your own coal or wood stove. Will you help to introduce this wonderful invention in your neighborhood? First: By using one yourself on a free trial basis. Second: By showing it to your friends, neighbors and relatives. Only a few representatives will be appointed. Big commissions. No canvassing.

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is absolutely the simplest "coal-oil-gas" burner on the market. California invention. Successfully used for three years without one complaint. Users enthusiastic. Heats stove, oven and waterback with one burner. An intense, even flame without roaring. Costs 3 to 4 cents per hour.

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FARMERS' CLASSIFIED MARKET PLACE

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42 cents a line (average 7 words). For white space, cuts, or display type, cost is computed according to total space occupied by advertisement. For detailed schedule, as for Advertisers' Rate Card, sent free on request.

Advertisements must reach us before the 18th of each month. Change of copy or advertisements running till forbid must be in our hands by the 10th of each month preceding date of issue. Address ORCHARD and FARM, 1111 South Broadway, Los Angeles.

LAND FOR SALE

A POULTRY RANCH OR COUNTRY HOME

If you have a few dollars—pep—perseverance—integrity and good character; if you are not afraid of work, are willing to work a few hours a day developing your own property, after or before earning a day's wages. If you want a small poultry ranch, fruit ranch a vineyard, a vegetable and produce, alfalfa or grain ranch, or a home in the country that you can develop and pay for on exceptionally easy terms —

THIS IS YOUR OPPORTUNITY

Only those who want to develop a home wanted.

Exceptional opportunity for work and a market for poultry, vegetable or other produce right at your door.

Land with water, on boulevard, railroad and bus line—seven miles from one of the finest cities in California, in lots of from two to forty acres at from $200 to $350 per acre; or grain or grape land without water stock at from $75 per acre up—one-fifth cash, balance in monthly or eight semi-annual payments; or, if you will place on the property improvements equal to the value of the land, we will take a mortgage, due in five years for the entire purchase price.

We will furnish you baby chicks, ducks, turkeys, hens, chickens, guineas, or fruit trees at wholesale cost price to help you get started.

We will give you the benefit of our experience on one of the largest and best equipped poultry plants in the South and cooperate with you in every way.

Exceptionally favorable opportunity at the present time for a

NURSERYMAN	BROILER RAISER
GRAIN FARMER	VEGE'LE RAISER
SQUAB RAISER	POTATO RAISER
TURKEY RAISER	ALFALFA RAISER

or a gasoline station, with a poultry, egg and vegetable stand in connection. If you have a family, so much the better. Plenty of opportunity for the boys and girls to make some money raising poultry of all kinds, squabs, pigs, rabbits, vegetables, etc.

No market problems. Your produce taken right at your door every day.

SMALL CAPITAL REQUIRED

You must have a few hundred dollars, all of which can be put into improvements on the property, if you desire; or be in position to make monthly payments at the rate of at least five dollars per acre per month on land with water and at the rate of $1.50 per acre per month on land without water.

We expect to develop here the largest, best equipped and most attractive poultry, fruit and produce community in the South.

For further particulars, address

EDGEMONT RANCH COMPANY
Post Office Box 66,
Pasadena, California.

FOR SALE—Irrigated land, rich, warm soil. Avocados, oranges, grapefruit, lemons and other tender fruit and vegetables were unhurt by the recent cold. For money making here is surely your one opportunity. Terms are 10 per cent cash and 10 per cent yearly. BUY NOW.

SOUTH COAST LAND COMPANY,
By E. M. CLAUSSEN, Sales Manager.
Broadway 5395. 14534.
912 Garland Bldg., 740 S. Broadway,
Los Angeles, California.

A NEW DISTRICT FOR YOU

Sutter Basin is a new district with most of the conveniences of an old, established country. The soil, irrigation and transportation facilities are unrivaled. Here is the place for your farm—grapes, fruits, dairying, vegetables, anything you want to grow. Most liberal terms. SUTTER BASIN COMPANY, 304 California Fruit Bldg., Sacramento, Calif.

OREGON Prune and diversified farm lands and orchards for sale in the famous Umpqua Valley. Climate unbeatable. Write The Umpqua Land Agency, for prices and information. Canyonville, Oregon.

PARADISE FRUIT GROWERS' OPPORTUNITY. Water, electricity, telephone, good roads, healthful climate. Write C. H. Nielsen, Paradise, Cal.

FARMS FOR SALE

FOR SALE—Arizona, 160 acres; 15-inch well; pump-motor; 120 acres cleared and leveled; fenced; house and ditches; on State Highway. Buyer can assume State Contract. Wood C. Baker, San Mateo, Cal.

FOR SALE—Stock and dairy ranch, open to range. Good water right. Write for terms, C. A. Wagner, Box 56, Hornbrook, Cal.

FARMS WANTED

WANT to hear from owner having farm for sale; give particulars and lowest price. John J. Black, 110th street, Chippewa Falls, Wisconsin.

I WANT WESTERN FARMS for cash buyers. Will deal with owners only. R. A. McNown, 357 Wilkinson Bldg., Omaha, Neb.

WANTED—To hear from owner of good ranch for sale. State cash price, full particulars. D. F. Bush, Minneapolis, Minn.

WANTED—To learn of farm for sale. Owner only. Enclose stamp. Percy Mugliston, Swift Current, Sask., Canada.

OKLAHOMA FARMS. Write for information. Board of Commerce, Shawnee, Okla.

REAL ESTATE FOR EXCHANGE

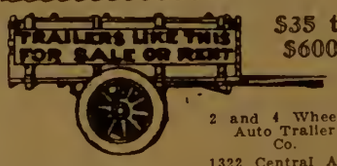
FARM EXCHANGES. Listing properties everywhere. Seekers new location. Stamp for copy. Frank Dike, Box 792, San Francisco, Cal.

AUTOS AND AUTO SUPPLIES

AUTOMOBILE Owners, Garageman, Mechanics, Repairmen, send for free copy of this month's issue. It contains helpful, instructive information on overhauling ignition troubles, wiring, carburetors, storage batteries, etc. Over 110 pages, illustrated. Send for free copy today. Automobile Digest, 505 Butler Bldg., Cincinnati, Ohio.

CAR OWNERS enjoy smooth riding! 50c each for Compton Foolproof Spring Oilers. They stop squeaking, clean, keep out rust, automatically lubricate springs. Send $4.00 for complete set eight oilers. Ford set, $2. Compton Spring Oiler Co., Box 3, New York, 29 Broadway.

AUTO TRAILERS



$35 to $600

2 and 4 Wheeled Auto Trailer Co.
1322 Central Ave.
ADDRESS DEPT. A. LOS ANGELES.

FARM TRACTORS, MACHINERY

FOR SALE—One combined well drill and boring outfit, almost new. Only drilled one well for my own use. W. Collings, Route 4, Box 148, Petaluma, Cal.

BEAMAN TRACTOR, with all attachments for sale, $250. 422 Mission Ave., Wilmar Station, Los Angeles.

KODAKS, CAMERAS, SUPPLIES

FREE
EASTMAN CAMERA

Have your kodak finishing done by experts. Mail your negatives to

Winstead Photo Finishing Co.
Box 116, Los Angeles, Cal.

"We put the snap in snapshots."
Write for our new price list, and how to get the free camera.

PHOTOPLAYS—STORIES

AMBITIOUS WRITERS, send today for Free Copy America's leading magazine for writers of photoplays, stories, poems, songs. Instructive, helpful. Writer's Digest, 598 Butler Bldg., Cincinnati.

AGENTS WANTED

WANTED—SALESMEN WHO CAN SELL high grade dependable nursery stock. Exclusive territory; outfit furnished and cash advanced weekly. Commission basis. Address Albany Nurseries, Inc., Albany, Oregon.

HELP WANTED

$133 MONTH commence. Government Railway Mail Clerks. Men, boys over 17. Steady. Common education sufficient. List positions free. Write immediately. Franklin Institute, Dept. D-125, Rochester, N. Y.

HELP WANTED—FEMALE

Women-Girls Wanted—Become Dress-Costume Designers. $140 month up. Learn while earning. Experience unnecessary. Sample lesson free. Write immediately. Franklin Institute, Dept. D591, Rochester, N. Y.

TAXIDERMY, FUR DRESSING

FURS tanned, made up; deer heads, game trophies mounted. H. F. Lorquin, 350 Pacific Ave., Santa Cruz, Calif.

CHIROPRACTIC COLLEGES

FREE Chiropractic Treatments, 931 S. Hill St., Los Angeles. Dr. Cale, President.

TREES, PLANTS AND GARDEN STOCK

Carob

A beautiful evergreen ornamental tree. Produces hundreds of pounds of richest fruit grown, 40 to 60 per cent sugar guaranteed, 6 to 12 per cent protein. Unsurpassed for windbreaks. A fine street tree. Learn more about this wonderful tree by sending for our circular on the carob.

Original Carob Nursery
Rt. 2, Box 60, San Bernardino, Cal.

AVOCADO TREES FOR SALE. Lyon, Dickey A., Fuerte, Pueblo, Ganter, Linda, Queen, etc. During the recent freeze my nursery escaped without the loss of a single tree. Only the leaves were touched. All my previous orders I can fill and still have many fine trees of the different standard sorts for sale. My trees are selling fast, so come early and secure the best. A. R. Rideout, Rideout Heights, Whittier, Cal. Phone 4971.

SUDAN GRASS SEED. Guaranteed absolutely free from Johnson grass and all noxious weed seeds. 18c per pound for less than 10 pounds. 14c per pound for 10 to 30 pounds. 9c per pound for 75 pounds or more. Delivered free. John Silbersack, Rt. 2, Orland, Cal.

ROSES, vines, shrubs and ornamental trees of all kinds. Send for new catalog and FREE offer. An absolutely reliable nursery establishment.

EAST LAWN NURSERY,
Box 418, Route 2, SACRAMENTO, CALIF.

MEXICAN AVOCADO SEEDLINGS FOR SALE: Any number up to ten thousand. Mathers' Avocado Nursery, Pasadena. P. O. Box 585, Phone Colorado 5044.

NURSERY AND GARDEN STOCK

NURSERY STOCK — Prices slaughtered while they last. The wonderful improved French prune tree, 10c; pears, 20c; grafted walnuts, $1. Low prices on other stock. Get in on this while they last. Send for planters' list now; 31 years in business. CARLTON NURSERY CO., Carlton, Oregon.

FRUITS AND VEGETABLES WANTED

ATTENTION MR. FRUIT AND VEGETABLE GROWERS—We are cash buyers of all kinds of fruits and vegetables. Get in touch with us by wire or letter. Merchants' Fruit and Produce Co., Gallup, New Mexico.

MISCELLANEOUS

MILK RECORD CHARTS FREE. Write ORCHARD and FARM, Los Angeles, Cal., for a year's supply. Sent postpaid to any address in the United States FREE. Only a few left.

DRINK YERBA MATE, Tea of Paraguay, a delightful, strengthening and nutritious health-giving beverage. 75c lb. consumer. Gutierrez & Concha, P. O. Box 454, Sacramento, Calif.

FOR SALE—Glass, good for hot houses, 8x10 inches, $3.25 per 100; 11x14 inches, $9.00 per 100. Kanner, 1127 Temple St., Los Angeles.

LATEST NOVELTIES—Useful sample, 25c; circulars sent free. Write to HAYES, H-210, Sausalito, California.

POWER TRANSFORMERS for sale or rent. 431 38th St., Oakland, Cal.

PATENT ATTORNEYS

ATTORNEYS fee reduced. Send drawing, photo or description of your invention and we will, without charge, render you opinion as to its patentability also give full information relative to obtaining patent. 30 years' experience. Prompt, efficient service. Martin P. Smith, 221 Consolidated Realty Bldg., Los Angeles.

HAZARD & MILLER
Oldest agency in Southern California. Herman Miller, 8 years Examiner U. S. Patent Office. Hazard's Book on Patents free. 5th Floor Central Building, Los Angeles.

PATENTS—Prompt, personal, efficient service by an attorney-at-law, skilled in all branches of Patent Practice. Over 12 years' actual experience; full information upon request. B. P. Fishburn, 339 McGill Bldg., Washington, D. C.

WEBSTER, WEBSTER & BLEWETT, Savings and Loan Bldg., Stockton, Calif. Established 50 years. Send for free book on patents.

TOBACCO FOR SALE

TOBACCO Special, Sweated Leaf, select chewing, 3 pounds, $1; 10, $3; chewing, smoking, 10, $2.50; good smoking 10, $2; regular, $1.50. Guaranteed. Co-operators, Murray, Ky.

HOMESPUN smoking or chewing, 5 lbs. $1.50; 10 lbs., $2.50. Valuable Formula. Smoking, 5 lbs., $1.00. Pigeon Roost, Sedalia, Ky.

ENORMOUS RESULTS ADVERTISING CHICKS

I have always had very good results through your paper in advertising chicks. In fact, for the amount expended I think we get more than through any medium we use.—Stubbe Poultry Ranch, Palo Alto, Cal.

POULTRY

BABY CHICKS

When you buy baby chicks the big thing for you to remember is QUALITY, in both the chick itself and the parent stock. By investigating you will find that our chicks are in a class by themselves, for we have absolutely the best equipment obtainable to produce them and very high class stock from which we get our eggs, and then, too, we know how to handle and deliver chicks. We are hatching every week. White Leghorns and Anconas that will lay. R. I. Reds and Barred Rocks that are well bred and will produce. Send for our circular and prices and order immediately for 1922 delivery.

Orange County Hatchery
Santa Ana, Calif.

Our Prices Are Right for

SPRING BABY CHICKS

And you cannot beat our stock anywhere in the State. Why not write?

WHITE LEGHORNS ONLY
The Laying Strain
Custom Hatch, 2c Per Egg
We have the capacity for you
STEELE'S EGG RANCH
Phone Gardena Exchange 692
Moneta, California.

FOR SALE—Blue Andalusian Chicks from prize winning stock, 28c and 32c. Hatching eggs that hatch, $2.50. Our Andalusians are real money makers. They lay the year around. Chicks from our eggs are not related, as we have many hundred hens scientifically selected for mating. We are the largest breeders of Andalusians in America.

BLACK AND BLUE HATCHERY.
South Main Avenue, Baldwin, Calif.
Phone Baldwin Park 1016.

BETTER HATCHED CHICKS

W. Leghorns, R. I. Reds. Our well-bred chicks, hatched under ideal conditions, will make producers for you. Free delivery by parcel post. Write for prices.

San Diego Co. Hatchery
Rt. 1. San Diego.

WHITE LEGHORN Baby Chix for May and June Delivery at $12.00 per 100; $115.00 per 1000, from flocks inspected and accredited by Sonoma County Farm Bureau. Safe arrival of full count, live, strong chix guaranteed.

THE PIONEER HATCHERY
418 Sixth Street Petaluma, Calif.

"WE ADVERTISE thorobred B. P. Rocks and sell T. B. P. Rocks. Record 22[illegible] 1921. Yards at 36 Little Delmas Ave. Address Mrs. Mary Ayer Warren, 36 Little Delmas Ave., San Jose, Cal. If any mail sent to P. O. Box 517, advise above address. Eggs, $2.50 per 15, records $5.00.

REDUCTION SALE: To make room, will sell 125 young Single Comb Rhode Island Red Hens at $2.75 each, if sold in one lot. Your choice of 25 at $4.00 each. They are of the same blood line that my prize winners are in the show room and egg laying contest. Fred Heying, Anaheim, Cal.

BABY CHICKS—HATCHING EGGS, from Hoganized hens, well mated. White and Brown Leghorns, R. I. Reds, Barred Rocks. Safe arrival guaranteed. Order early. Write for circular. Stubbe Poultry Ranch and Hatchery, Box 67-C, Palo Alto, Cal.

FOR SALE—Hatching eggs. Brown Leghorns, the kind that lay and pay. Prize $1.50 per setting. $4 for 45, $6 per 100, $50 per M. Fertility and satisfaction guaranteed. Red Wing Poultry Yards, Box 51, San Leandro, Cal.

WATCH US GROW—Baby chicks. We are now booking orders for the season of 1922. Brown and White Leghorns, Rhode Island Reds, Barred Rocks and Anconas. Safe arrival and satisfaction guaranteed. E. W. Ohlen, Campbell, Calif.

BABY CHIX. LAYERS ARE PAYERS. Ours pay. Chix from hens tested and mated for egg production. R. I. Reds, Barred Rocks, Black Minorcas, $14 per 100. White Leghorns, $12.00. Denton Poultry Yards, Campbell, Cal.

S. C. WHITE Leghorn baby chicks, from our own well selected stock, bred to lay. Now taking orders for spring delivery. Prices on request. Geriga & Sarich, R. F. D. Box 346, Sonoma, Cal.

FOR SALE—SPECKLED SUSSEX, the best all-purpose fowl. Hatching eggs, $2.50 per 15. A. Adderly, 3546 Herman Avenue, San Diego, Cal.

FARMERS' CLASSIFIED MARKET PLACE

POULTRY

PROFITABLE POULTRY, capacity 200,000 chicks, hence prices surprisingly reasonable for quality. A Farm Advisor's recent order was 5000 White Leghorn, 2500 Brown Leghorn and 850 Red Chicks. His orders are coming after 2 years' extensive trial of our chicks throughout his county. "Four turks hatched June 16, 1921 averaged 20 pounds seventh month." "My leghorns laid at 4½ months, Reds at 5, are beautiful." These strains, 180-290-egg Leghorns, Rocks, Reds, Anconas, Wyandottes (Minorcas, Andalusians, ducks, turkeys), yearly lead many egg-laying contests, supply foundation stock, fill repeat orders for hundreds. Why? ELECTRIC HATCHED, vigor, growth, winter laying, profit, guarantee. Booking immediate future delivery, below pre-war prices. Smallest, largest orders welcomed. Write Box O, Profitable Poultry, 13 North Fair Oaks, Pasadena.

CERTIFIED S. C. WHITE LEGHORN BABY CHICKS from heaviest laying stock. Safe delivery live, vigorous, chicks guaranteed. No money in advance; pay on delivery. Prices for May and June $3.50 per 25, $6.50 per $50; $12.00 per 100. Special prices 500 and 1000 lots. Largest electric hatchery in the world. Established 1898. Member Sonoma County Farm Bureau. Accredited Hatchery List.
MUST HATCH INCUBATOR CO.
432 Seventh St. Petaluma, Cal.

S. C. WHITE Leghorn baby chicks, from trapnested Tancred and Tom Barron roosters. Their mothers have an egg record of close to 300 per year. We guarantee safe arrival and full count. 15 years shippers of baby chicks. Literature and prices on request Booking orders NOW for FALL and SPRING of 1922. HICKS ELECTRIC JUBILEE HATCHERY, Petaluma, Calif. Route 2, Box 22.

BABY CHICKS, EGGS—Hoganized White Leghorns (none better), Brown Leghorns, utility Rhode Island Reds and Barred Plymouth Rocks, choice Anconas, Black Minorcas and Blue Andalusians, bred for heavy egg production. Free folder. Order early. McDonald Poultry Ranch and Hatchery, Rt. 1, Box 246, King Road, San Jose, Calif.

WHITE WYANDOTTES, extra fine pen, $5; others, $3 setting. BLUE ANDALUSIANS, high class stock, $3.50 setting. GOLDEN CAMPINES AND LACKENVELDERS from best yards in America. Mature early, heavy layers of white eggs, $6 setting. Anconas, $2.50 setting. Postpaid.
J. B. CRAWFORD,
Route 2, Compton, California.

BOOK YOUR ORDERS FOR BABY CHICKS NOW. APRIL AND MAY DELIVERY. ROCKS, REDS AND S. C. WHITE LEGHORNS, ALL HATCHED FROM OUR OWN STOCK. MATURE BIRDS FOR SALE. E. A. FISCHER POULTRY RANCH, BELL-VERNON AND EUCLID AVE., COMPTON, CAL. PHONE COMPTON 132.

BARRED PLYMOUTH ROCKS—"Nothing better in poultry." Wonderful layers. Hens and pullets for sale. Also choice cockerels that will improve your flock. Now booking orders. Have made a specialty of Barred Rocks for over twenty years; "that's why" our birds win at all leading shows. Catalog free. Vodden's Rockery, Los Gatos, Cal.

WHITE LEGHORNS—Eggs for hatching; 100 per cent fertility guaranteed. Absolutely first class cockerels and pullets ready soon. Finest laying strain. Prices very reasonable. Send for folder. "Secret of Success." Curtis White Leghorn Ranch, Rt. 2, Box 29, Gardena, Cal.

THE MISSION HATCHERY
Barred and White Plymouth Rocks, R. I. Reds, Black Minorcas, White and Brown Leghorn baby chicks. HATCHING EGGS, quality high, price low, circular free.
MISSION HATCHERY,
Box 7 Campbell, Cal.

FREE BOOK. "Chickens From Shell to Market," describing the "Couson" system of feeding, as well as giving other information of interest to Poultrymen; on application to COULSON COMPANY, Petaluma, Cal.

BABY CHIX—White Leghorns (Tancreds), Golden Buff and Brown Leghorns, Anconas, Black Minorcas, Buff Orpingtons, R. I. Reds, Barred and White Rocks every week. Enoch Crews, Seabright, Cal.

BABY CHICKS every week. Barred Rocks, R. I. Reds, Black Minorcas, Brown and White Leghorns. Safe arrival and satisfaction guaranteed. Tobener Hatchery, Route Box 306, San Jose, Cal.

BROWN and White Leghorn baby chicks and Rhode Island Reds from carefully selected, heavy laying stocks. Safe arrival and full count, live, strong chicks guaranteed. [illegible]RSON'S HATCHERY, Modesto, Calif.

S. C. WHITE LEGHORN Baby Chix from own Bred-to-lay stock. Now booking March to June delivery. Model Poultry [illegible] W. C. Smith, Prop., Corning, Calif.

[illegible] Brahmas and White Plymouth Rocks. [illegible] strains. Eggs, 30 for $5, express [illegible] California and Oregon. T. H. Brown, [illegible] 204, Dunsmuir, Calif.

[illegible] Leghorn Baby Chicks. Trapnested [illegible] Booking orders for now and future [illegible] Pebble Beach Poultry Farm, Sunny[illegible]

[illegible] ANADLUSIANS—Write for [illegible] Beisher, 330 Edgeware [illegible]

POULTRY

THE Schlotthauer Single Comb White Leghorns have been bred since 1908 and all breeding stock has been carefully hoganized to insure heavy laying and strong, hardy chicks. Safe delivery and full count guaranteed. For more information Write for free booklet. Write Plumage Poultry Farm & Hatchery, Exeter, Cal.

BABY CHICKS
BABY CHICKS — Start right with the BEST —the only kind we hatch. All varieties each week. Ducklings, turkeys, hatching eggs. Incubators, brooders, supplies of all kinds. Send for price list.
FANCIER'S EXCHANGE,
640 South Main, Los Angeles

TURKEYS

GIANT BRONZE TURKEYS

Large turkeys can be raised at practically same cost as small ones. It is in the strain. One of our toms will give you five more pounds of meat to market in all his get the first year; besides vitality and beauty.

GOLD NUGGET STRAIN

J. Will Blackman, Originator
Won at California's two greatest shows, Gold Special Sweepstakes for best turkeys, California State Fair, 1920, against 66 of the State's best turkeys; also every 1st, 2nd and 3rd prize and Gold Special Sweepstakes at Los Angeles Livestock Show of 1920.

AN UNEQUALED RECORD

Toms and hens for sale; a few high class exhibition toms to win in any show or head any flock. Book orders early for January and February shipment, as each year we are sold out.

BLACKMAN & MUMFORD,
607 East Third St., Los Angeles, Cal.

PURE BRED GIANT BRONZE, Goldbank, Copper King V strains. Flocks headed by four famous Madison Square Garden winners, including Goldbank VIII, Goldbank Boy, Goldbank King and Copper King's Boy, bred to 20-lb. hens. Eggs in season. Bronze King Farm, Route 2, Box 88-A, Merced, California.

HART'S Mammoth Bronze Turkeys. Strong, vigorous young toms, ready for service, 20 to 27 pounds each, at $12, $15 and $18 each. No hens. Eggs, $5 per 12, $18 per 50, $35 per 100. Send for circular. Albert M. Hart, Clements, California.

BABY turkeys and eggs, white, bronze, red. White guineas, $3.00 either sex. 13, $2.50. White Muscovy quackless) duck eggs, 12, $2.00. Ducklings, 35c. All from 1st prize stock. B. Hocking, 541 E. 33rd St., Los Angeles, Cal.

BOURBON RED TURKEYS. Eggs from the largest and best breeding flock in the West. Special prices for May and June.
The Ferris Ranch,
Rt. 2, Box D. Pomona, Cal.

BRONZE turkey eggs, also herding Collie dogs. 45,000 acre range. San Miguel, Cal. Good opportunity for turkey raisers with small capital. John G. Mee.

SPENCER TURKEN TURKEY CHICKEN. Hardiest 200 eggs. Turkey meat. Photo. Booklet free. Spencer, 9 Case St., Santa Cruz, Cal.

RED JACKET strain Bourbon Red Turkeys. Egg orders booked now. E. C. Laux, Hemet, Cal.

RABBITS AND PIGEONS

FOR SALE—Pedigreed Flemish Giants. All ages. Breeders, 13 lbs. up. Money back guarantee. No profiteering. Correspondence a pleasure. Thos. W. Frederick, 129 W. 6th St., Long Beach, Cal.

FOR SALE—Thoroughbred black, steel gray and gray Flemish giant breeding does and bucks. No fancy prices. Mike Ditzel, 936 Maple, Los Angeles, Calif.

FOR SALE—Largest and best equipped squab plant in California. Address T. E. Berry, Rt. 2, Box 114, Inglewood, Cal.

FOR SALE—Carneaux pigeons, real squab raisers, $5 pair. Palms Squab Ranch, Rt. 2, Box 114, Inglewood, Cal.

PEDIGREED FLEMISH GIANTS—No fancy prices. Mrs. T. Beeching, 1578 West 46th St., Los Angeles.

BIRDS, DOGS, PET ANIMALS

DOG OWNERS TEXT BOOK FREE. An expert guide for dog owners on proper training, feeding and care of dogs. Sent free with 3 months subscription to Sportsman's Digest. Send 25 cents (coin or stamps) today. Sportsman's Digest, 313 Butler Bldg., Cincinnati, Ohio.

Imagination Made This Ranch

(Continued From Page 8)

27 pounds, and tankage to make 100 pounds, the whole being mixed with skim milk and water, and fed by means of a tank car which is pushed along a narrow gauge track before the pens. The hog feeding operations are in charge of Tracy L. Curtis. The hogs are kept much of the time on alfalfa pasture, especially the young breeding stock. The market stuff gets corn and tankage. Once a week, condition powders are given.

The hog equipment is very complete at Sierra Vista. The farrowing house is 25x100 feet, of hollow tile construction. The outside units have concrete yards, with cement feed and water troughs. Back of the sheds are large exercise yards and concrete wallows in which medicated water is kept.

The entire ranch is fenced hog and turkey-tight, for turkeys are an important product. From 1500 to 3000 market birds are produced each season, the poultry equipment being unusually modern and complete.

The brooders are electrically heated and equipped with automatic thermostat control, with the additional feature of an automatic alarm that sounds a bell at the residence in case any unit gets out of order.

The poultry department is in charge of R. N. Hood, who gives close attention to the development of the young poults and carries out a progressive system of feeding.

The youngsters get no feed at all until they are 36 hours old, except that each is given a black pepper ball the day before regular feeding commences. They are started on hard-boiled eggs and for the first five days receive nothing more than this, with some curd or clabbered milk, finely ground oats and grit, mixed in equal parts and given in small quantities six times a day.

During the next period, four feeds a day of curds, oats and chopped green onion tops are given, this mixture consisting of at least one-fourth onions. Then bone meal is added, and after the first month has been safely passed, a wet mash is given morning and evening and a scratch feed of cracked wheat at noon.

Knowing that wild turkeys eat a great deal of the wild pepper grass, Mr. Hood emulates nature by giving his charges cayenne pepper, a teaspoonful at each feed for each 100 birds.

Buttermilk or clabbered skim-milk is kept before the birds at all times.

The temperature and atmospheric conditions are regulated also in progressixe order; that is, the baby turks are started at a hover temperature of about 90 degrees and held practically under the brooder by means of a section of poultry netting, this being gradually enlarged and finally removed so that when the temperature has been reduced to 80 or 60 degrees, each grade or age has the run of its hover room.

Gradually the windows are opened, according to weather conditions, and as soon as practicable the poults are let outside in the runways, where they pick up bugs and green stuff and exercise in the sunlight. Great pains are taken to see that no young turkey is chilled or allowed to become wet.

To supply feed for all the livestock (which, as now planned, again will be increased) large quantities of grain and hay are produced, and this year quite an acreage of dwarf rape, to be used as pasture, has been planted. Some 75 acres of barley will be grown this year, and about 40 acres of alfalfa. Melilotus Alba is planted for a cover crop, pastured until fall, and then turned under, when the field is planted to barley. Melilotus, barley and alfalfa form the rotation. The farming operations are in charge of G. L. Wilkinson.

In addition to the buildings mentioned, the ranch boasts two modern and well equipped dwelling houses, a large granary, machine shop and garage, three pumping plants with electric power, having a total capacity of 100 inches, a bunk house for seven men with a separate room for each, and a tank tower for domestic water supply. The equipment of machinery is very complete, including a tractor and all necessary implements, a half-ton "speed wagon" for hauling and delivery, and the usual complement of "flivvers."

Captain Kyne, very busy with his literary work, so far has found little time to spend at his "dream ranch." But a nicely-furnished room is maintained always ready for him, and when he can steal away from his desk and those who constantly besiege his office, he motors to the beautiful upland valley, forgetting for the time, no doubt, the months of trench life, danger, blood and terrible conflict that gave birth to his big idea.—J. C. K.

LIVESTOCK—GOATS

ANGORA GOATS FOR SALE. Fine bred stock for Mohair, 150 Wethers, 300 Does will clear your brushy pasture. Mohair sells at good prices. Price low. Write or see C. H. Greenfield, St. Helena, Cal.

FOR SALE—Grade Toggenburg milk goats. Fine stock for starting a herd. Ed Thomas, Rodeo, Cal.

ROOFING MATERIALS

ROOFING PAPER, 1sts, complete, 1-ply, $1.25; 2-ply, $1.60; 3-ply, $2.20.
Lead and oil paint.....$2.00
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LIPPIA LAWNS—Endure heat, drought, neglect, without injury. A beautiful lawn in reach of all, so small the upkeep. Write for booklet. Hill-Girt Nursery, Martinez, California.

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RAZOR BLADES SHARPENED

SAFETY RAZOR BLADES SHARPENED SHARP. Single edge, 2c; double edge, 3c. Ever Sharp Edge Company, 31½ No. Fair Oaks, Pasadena, Cal.

GUINEA PIGS, MICE AND RATS

GUINEA PIGS for sale; all colors; prices right. Also will buy. Write J. E. LOVE, 1012 Brooklyn Ave., Pasadena, Cal.

Palo Verde Valley

(Continued from Page 13.)

farmer has an opportunity to fatten his purse. It has been found that winter lettuce, planted in September at a time when other crops do not interfere, may be harvested in December to reach the attractive holiday markets.

This crop, as well as asparagus, tomatoes and other vegetables, promises to add much to the wealth of the valley, now that icing facilities and good transportation are available.

As a cantaloupe and melon district, Palo Verde is said to be without a peer. The casaba reaches the Christmas trade and is a big money maker. Dates of certain varieties thrive, and beans, sweet potatoes and even Irish potatoes are grown with uniform success. Pears and figs are among the tree fruits grown successfully, while strawberries and brush berries are wonderfully productive.

There are many well-developed and attractive ranches throughout the valley. One of the most profitable of these is the 160-acre place of Herman Bahls near Blythe, where a 50-acre tract has been planted to Thompson's seedless and Malaga grapes. Mr. Bahls was very successful with cotton and grain over a period of several years.

Not far from the Bahls ranch is the attractive home of E. G. Wiemers, who has made an outstanding success with pomegranates. From 500 nine-year-

(Continued on Page 34)

Opportunities in Chestnut Growing

Third and Concluding Article

By C. E. Parsons, Horticulturist

WRITTEN ESPECIALLY FOR ORCHARD AND FARM

GRAFTING and budding both succeed with the chestnut. The skilled grafter can get good results with the methods used for other trees, but the novice must experiment before he attains success.

Valuable information may be derived from the U. S. Department of Agriculture Bulletin No. 700 on Pecan Culture, (obtainable free from the Division of Publications, U. S. D. A., Washington, D. C.). This bulletin gives in detail different methods of grafting and budding which can be used for the chestnut as well as the pecan.

VARIOUS GRAFTING METHODS

Whip grafts on small shoots or stocks the size of a lead pencil or slightly larger, or cleft grafts on shoots one-half to one and a half inches, or the bark graft on larger growth, probably will give the largest measure of success. The bark graft on shoots of from one-half inch to five inches is more successful for the novice, as it is very simple.

3-Year-Old Paragon Tree

In any method of grafting the chestnut, it is essential that great care be used in waxing, and then re-waxing after about two weeks. The wax should cover the cuts made in the stock and scion and should be applied immediately after inserting the latter.

The scion also should be waxed for its entire length, so that the job is sealed from top to bottom; not even bubbles should be left. Another precaution is to cover the whole by tying a paper bag over the top.

PLANTING THE TREES

Thorough preparation of the soil before planting is essential. Anything that can be done afterwards will not make up for a failure to observe this rule. Blasting may be necessary and usually is beneficial if the ground is not too wet.

For orchard planting, the trees should be placed at distances of 40x40, 50x50 and 60x60 feet. On good land the latter distance is preferable. In no case set the rows closer than 60 feet apart, but the trees may be 25 or 20 feet apart in the rows. In this event, however, it will be necessary to remove every other tree after they reach a certain size. This latter plan is better than planting the entire orchard 25x25 or 30x30 and later removing part of the trees.

A good distance between the rows provides for better growth, and furthermore, the inter-planted tree may be left a number of years longer. Again, the wide row permits inter-planting to vegetables or berries. In any event, it is a serious mistake to crowd chestnut trees.

METHOD OF PLANTING

After staking out the ground in the usual manner, dig holes 2½x2½ feet, then break down the top soil around the rim, allowing it to fall into the bottom of the hole. Always use fine top soil around the roots, and firm the soil well by treading.

Before planting, cut with a knife all broken or bruised roots and clip the end of every root. Although there is no harm done by firming the soil close to the tree and covering with loose soil, it is better to leave the entire top six inches loose.

PROTECTION FROM SUN

During the first year or two, chestnut trees must be shaded. A good method is to protect the young trees with yucca or parrafined paper protectors, or the trunk may be wrapped, to the branches, with burlap or paper, care being taken not to tie so tight as to interfere with the flow of sap.

In planting the chestnut (or any other tree) it is well to set no deeper than the tree was planted in the nursery, and to set in the same position. As a rule, this can be determined by the appearance of the bark, the north side being greener than the south side. Less loss from sunburn will result if the southern side, hardened by exposure, again is placed to the south.

After planting, cut back the top to about four and a half feet if the tree is a straight whip, but if it is branched at about this height, shorten the branches down to within two or three buds from the trunk. A small tree, under three feet, should be cut down to within three or four buds from the ground, the strongest shoot being allowed to grow to form the trunk and being headed the following season.

Staking the young trees is desirable, but not usually necessary.

IRRIGATION

As in the case of many other trees, the chestnut will produce without irrigation, but a larger tree and consequently a larger yield, will result if water is applied.

While the tree is young, regular irrigation is very desirable, but if water is unavailable, the young tree may be brought into bearing without it.

In the case of the unirrigated orchard, greater care in preparation and planting is necessary, as well as more attention to cultivation.

FREQUENCY OF IRRIGATION

Unless inter-crops are grown, irrigation may be limited to one application a month during the growing season, after the trees are in bearing. But young trees, before the bearing age, usually require water twice a month. It is essential that the water penetrate well into the sub-soil.

With a long iron rod or a soil auger the irrigator can test the penetration and gauge the application of water accordingly.

Light irrigation induces shallow rooting, which is very undesirable.

Do not continue irrigation too late in the growing season as it is likely to make the nuts crack open and overdevelop them. Cracked nuts soon spoil and mold.

Cultivation must be thorough so that free growth is promoted. After maturity, cultivation need not be so intensive.

Old trees, even when given less care, seem to bear heavily. Nevada City trees that have had no care for years every year bear heavy crops of marketable nuts.

During the first few years it is advisable to hoe around the tree by hand, but after the tree is well established an annual plowing, or on light soils, a good discing in the spring, with cultivation after each irrigation, will be sufficient.

While the planting of annual cover crops is not necessary, if practiced, it should be started the first year so as to build up a rich soil for the future.

PRUNING

At the end of the first year, pruning should be commenced with the idea of training the young tree. Only three or four shoots well branched about the stem, should be allowed to grow to form the main scaffold limbs. Once these are branched to the owner's satisfaction, the only pruning needed is to keep close limbs out and keep the head open. It is absolutely necessary if one is to harvest large crops of large nuts. This does not mean that the center must be pruned to goblet shape, like a pear or apple tree. Simply let the tree develop naturally, but do not let it become bushy.

If grafted trees show a tendency to bear heavily while young, the burrs should be thinned out so that very few are left; otherwise the tree will grow out of shape and be retarded in its development.

HARVESTING

Allow the burrs to mature thoroughly, and fall of their own weight. Some varieties stick so that shaking or jarring the limbs must be resorted to. On other varieties the burrs will open so that the nuts fall to the ground. Burrs which fall and do not open easily can be made to "shed" the nuts by pressure of the feet or by striking with a small wooden mallet.

Some use heavy leather gloves and

A Mature French Chestnut—Marron Combale Variety

Paragon Chestnut at 8 Years

[illegible]st them out by hand. A short [illegible]k, turned up on end like a hockey [illegible], is very helpful.

The nuts should be picked up every [illegible]rning and stored in sacks, if they [illegible]re to be shipped at once. If they are to be kept for a while, they should be thrown in a heap on the floor of a [illegible]ed, to sweat. The pile should be stirred twice a day for two days; then the nuts may be sacked.

Always store chestnuts so that air [illegible]n circulate freely. Never pile sacks [illegible]e on top of another for any length [illegible] time, or they will heat and mold. If lack of space necessitates stacking, [illegible]lace sticks between the sacks to give [illegible]entilation, and do not pile too deep.

In gathering the nuts, have two pails —one for first grade, perfect nuts, and the other for culls and second size. [illegible]ven the use of three pails may be advisable, for firsts, seconds and culls. [illegible]econds and culls mixed with firsts [illegible]ring down the price. Nuts of large [illegible]ze with split skins should be placed [illegible]ith the culls as they mould easily.

IS CROSS-POLLINATION NECESSARY?

Chestnuts at first bearing, develop a great many burrs containing only a few nuts. This has been erroneously [illegible]ted as due to the lack of cross-pollin[illegible]tion, and has been said to indicate that the chestnut will not bear when planted by itself.

With seedlings and grafted trees, a mixture of varieties will give better results, but the fact that only a few [illegible]urrs develop nuts really is a provision of nature, for if all the burrs were filled, the tree could not stand the weight, nor develop the nuts to a marketable size.

UNLIKE OTHER TREES

It is a well-known fact that all of our cultivated trees do not develop every blossom into fruit. The peach and plums set so many that a great expense is involved in thinning to get fruit of market size. Pears and apples shed the un-pollinated blossoms soon after blossoming, but the chestnut holds every burr whether empty or full, until harvest time. Mature trees yielding from 100 to 300 pounds of nuts will have a great many empty burrs.

MISCELLANEOUS HINTS

Here are a few brief hints and random notes concerning chestnuts:

Always ship in double sacks, as every trainman or handler seems to feel that something gives him the right to sample them. Observation of the double-sack rule will save the shipper much loss and trouble.

Following is a method of preservation if it is desired to keep the nuts in a bright, plump condition through the winter months for home use: Place the nuts in five-gallon oil cans or tight boxes and cover with two or three grain sacks. Dump out once a week and allow them to air for a half hour or more, keeping in cool shade or dry cellar.

A pest of the Eastern States is a small worm which is the larvae of the chestnut weevil. So far as I know, this pest never has made its appearance on the Coast. In order to prevent its introduction, Native American Sweet chestnuts or any others produced in the Eastern States should not be brought into California.

Cull chestnuts can be used safely for fattening poultry and hogs. Cattle also will eat them. In fact, it is necessary to protect young trees from stock if you wish to save the crop during the harvest season!

Valencia Show

By E. M. Gore

THE enormous increase in the production of Valencia oranges during the comparatively brief period since their introduction into California, is amazing.

In Orange county, Valencias practically have supplanted Navels as [illegible] demonstrated at the forthcoming Valencia Orange Show to be held in Anaheim, May 23rd to 30th.

The southern county has proved exceedingly well suited to Valencia [illegible] and as a result, the bulk of the crop now is grown in this district. Of the total shipments of citrus fruit from Orange county in 1921, more than three-fourths, valued at nearly $16,000,000, consisted of Valencias. Scarcely 20 years ago Navels comprised the principal citrus crop of Orange county, while last year their valuation was not more than 1-20 that of the newer variety.

REASON FOR POPULARITY

Among the various reasons for the advance of Valencia culture are the following:

Valencias do not ripen in Orange county until late in the spring. The heaviest shipments are made during the latter part of April and during May and June. At this season, moreover, the Navel crop practically is out of season. The Valencias, therefore, serve to bridge the gap, giving California a continuous citrus season. Valencias find a ready market in the East during the summer.

Another advantage is that Valencias as a rule are not affected by the winter frosts, due to the fact that they do not commence to blossom and put on fruit until late in the season.

The leading Valencia district of Orange county last year was the Anaheim region, which contributed 1,171,429 boxes of the total of 4,965,088. The official report of the County Horticultural Commissioners shows that nearly 8000 acres is devoted to citrus culture in Orange county.

"TELLING THE WORLD"

During the spring of 1921, the Valencia growers, realizing the proportions reached by their industry, sought some means of heralding their achievements to the world. The result was the first annual Valencia show held at Anaheim last May in which all of the municipalities, civic and distributing concerns, and many important growers took part.

Enthused by the success of their first venture, Orange county boosters immediately laid plans for a greater, finer and more beautiful exposition than the first, and committees have been busy during the past year preparing for the coming show.

Indicative of the growth of the idea is the comparison of exhibit space, the first show having been housed in one tent. This year's gigantic exposition, however, will be covered with three huge tents, each more than a city block in length, and will be held in Anaheim's beautiful new 20-acre city park. Early reservations of space exceed all expectations, officials declare.

Many striking exhibits are planned, including different styles of architecture and color schemes. A coating of Valencia oranges will cover each display.

THE RACK EXHIBITS

The rack exhibits will include the finest specimens of Valencia oranges grown in the world, the growers striving to win laurels for fruit, not only because of the rich prizes offered, but also because of the prestige attached to success at this great show.

An automobile show, complete in every detail, will be a feature.

Anaheim, the scene of the show, is situated on the State Highway to San Diego and is reached readily by motor car, bus or the Santa Fe railroad. *Remember the date, May 23-30.*

Some Practical Notions About Buying Farm Machines

THE growing season is well under way, six million farmers are out in the open, remolding the great fertile world, and *you* are probably confining your attentions to the fields out of which your own profit must come.

Ahead of you is a summer of activity, and your plans will have much to do with farm machines. This summer you may invest in a number of such items of practical equipment as are listed at the right. You will be deciding what machines will increase your production, save you the most, and cost you least in the long run. Each purchase will lay a bit of the foundation for coming seasons.

Each new machine must be a good, reliable worker and moneymaker for you during years to come. It has been proved many times that one defective, inefficient machine may in one season tear down the profits built up by good tools and hard labor. Your choice in each case is no light matter for there are wide variations in value.

It is not for selfish reasons alone that we ask you to consult with the McCormick-Deering dealer in filling your farm equipment needs. The plainest sort of common sense, a long unbroken record of accomplishment, the ripe judgment of millions of good farmers—all considerations point to the same advice:

Rely on the good design and quality construction of the equipment in the **McCormick-Deering Line.** Invest in Titan and International tractor power to work smoothly with McCormick-Deering belt and drawbar machines. Count on the full stocks, the ready service, the help and advice of our dealers. The **McCormick-Deering Dealers** are in business for your trade, but they are also working to gain your good will and confidence in the years to come.

These **McCormick-Deering** Products are in Demand in Summer and Fall:

Tractors
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McCormick-Deering Dealers Offer You Reliable Tractors and the Best-known, Most-complete Line of Tractor-operated Equipment in the World.

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92 Branch Houses and 15,000 Dealers in the United States

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Bean Turbine Pumps

These pumps assure maximum delivery of water at highest efficiencies, against varying heads. They are made in very small sizes to fit your domestic well and deliver from 100 to 180 gallons per minute. Made also to deliver up to 3500 gallons per minute.

Careful, high grade engineering skill and workmanship is employed throughout.

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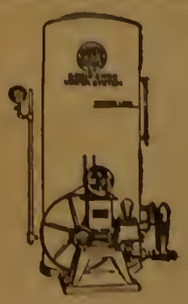

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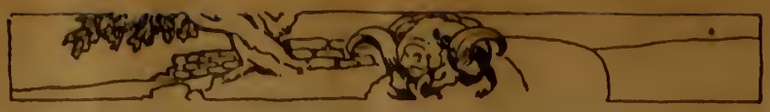

From Sheep to Blanket

A NEW idea in wool marketing has been tried out by American wool growers. In 1920 the State Department of Agriculture of North Carolina approached the Chatham Manufacturing Company of Winston-Salem, N. C., one of the largest wool blanket manufacturers in the United States.

This mill agreed to work farmers' wool into blankets, simply charging a net amount in cash for making up as many pounds of wool into so many blankets. At first the work was begun in a very small way.

A few sheep owners sent in wool and gradually the plan grew until its scope has extended over the entire United States.

It is a known fact that blankets are a more sanitary and convenient form of bed clothing than the cumbersome quilts still in general use.

Wool blankets give warmth without weight, and are easily washed. Heavy quilts and comforts cannot be washed in a practical way. Good wool blankets are nature's own covering. If they are made right, out of a good quality of wool, and contain fast colors, they should last a life time. They come in many different colors and patterns and are made to fit any desired color scheme.

So successful has been the original plan that the National Wool Growers' Association, as well as State associations, East and West, have encouraged the members to do likewise. In fact, some manufacturers now make all-wool suits from the virgin wool supplied by growers.

The Chatham Manufacturing Company, Winston-Salem, N. C., have a capacity of from eight to ten thousand pairs of blankets per week, and a large part of this production is now going direct to the farmer.

Several State Agricultural Departments, like Maryland, are pooling the wool and sending it in to the mill, where it is turned into blankets.

The farmers then take as many as they wish and sell the balance through their State Department. This business has increased mainly by the wool grower showing the blankets to his friends or telling them of the plan, and they in turn write to the mill for a booklet of information.

Bert Kay

(Continued from Page 21)

his hens lay two eggs for each one they had laid before. He sold out all his old stock in March and bought from one of the hatcheries here whose stock was far in advance of that which he had been feeding, only to average 100 eggs or so a year. The lot he bought has a trap-nest record from birds that have laid more than 200 eggs per year on the side of both dam and sire. What sensible poultryman wants to raise birds of a small-yielding record when he can feed the other stock for the same money and get almost double the returns?

A Correction

A TYPOGRAPHICAL error occurred in the advertisement of the Genor Cavy Company, published in the April number of ORCHARD and FARM.

An reference to the U. S. Government Bulletin, the number should have been 525 instead of 585. Subscribers desiring this bulletin of information about guinea pigs should address the Division of Publications, U. S. Department of Agriculture, Washington, D. C., and order by number.

Dusting of Trees, Vines, Etc. Bleaching, Etc.

ANCHOR BRAND SUBLIMED VELVET FLOWERS OF SULPHUR, also EAGLE BRAND and FLEUR DE SOUFRE, packed in double sacks, are the FLUFFIEST and PUREST sulphurs that money can buy.

The fine light SNOWFLAKE-LIKE particles float to every surface and crevice of the plant.

Do not adulterate these sulphurs with any inert material such as lime or Kaolin, etc. Coating the sulphur particles with an inert material PREVENTS the FUMING ACTION caused by the sun's rays.

Send for Circulars 6, 8 and 10 about our "Toro" Brand Agricultural Compound and booklet "The Truth About Sublimed Sulphur," also price list.

San Francisco Sulphur Co.,
621 California St. San Francisco, Cal.

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See, or write
California Implement Co.,
122 No. Los Angeles St.
LOS ANGELES, CAL.

Palo Verde Valley

(Continued From Page 31)

old trees, Mr. Wiemers has realized 16 tons, for which he received $90 a ton f. o. b. shipping point.

He is setting out a larger acreage to pomegranates, pointing out that they are easy to harvest and involve little expense in production. Mr. Wiemers also is growing grapes, authorities having predicted that some of his vines would produce 25 to 30 pounds each at 16 months from planting as cuttings.

One man came to Palo Verde in 1913 with a large family and no other resources. The father, mother and children secured work as cotton pickers and saved money enough to buy 20 acres "on a shoe string." The following year they were able to buy another 20 acres and this man now owns 200 acres clear, with valuable improvements, and is said to have loaned considerable money during the period of high prices.

Another man came in 1917 as a renter. From his first year's crop he realized enough to make a payment on an 80-acre ranch. The following year he bought 40 acres, and now owns 120 acres, which not only is highly developed, but also improved with a modern residence and other fine buildings.

These cases are typical of results secured by hard working, intelligent people who have settled this fertile valley. In fact, the visitor is impressed by the community spirit, refinement, progressiveness and contentment of the fine "folks" of Palo Verde. Many other attractive and successful ranches might be described were space available.

School facilities are excellent. The town of Blythe is a progressive modern little city, with every facility for comfort. Ripley, southern terminus of the railroad with its $125,000 hotel and rich surrounding country, promises to become a bustling little metropolis, while inland towns appear to have a rosy future, including Rannels, Fertilla, Neighbours and Palo Verde.

The Blythe Herald, published by Henderson & Watson, is considered one of the liviest and best managed newspapers in the southwest, and has taken a prominent part in the development of the district.

All in all, Palo Verde Valley seems to represent simply another way of spelling "OPPORTUNITY," for here, indeed, at present attractive land values, a dollar may be planted, practically with assurance that it will grow and increase. Good, virgin land with perpetual gravity water right still may be had at $100 an acre, while some improved land in cultivation is available at $200 an acre or less.

Who can contradict the statement of one farmer who is planting grapes, that one or two years' yield will make his $100 land worth $600? Production and return on the investment are what make land values in a strictly agricultural district.

To the investor; to the young man who wants to get ahead rapidly; or to the experienced farmer who desires to capitalize his knowledge and make his money work for him, Palo Verde cannot fail to have an irresistible attraction.

An interesting feature of the lower end of the Valley is a large body of fresh, clear water known locally as "The Beach." It is 600 feet wide at its broadest point, more than 10 miles long and 10 to 20 feet in depth.

The stream is said to be well stocked with fish and naturally this body of water is quite a resort for the people of Palo Verde and neighboring communities. It is formed by springs welling up through the gravel.

"The Beach" commences only a short distance below Ripley and extends southward, its shores being heavily wooded with natural vegetation.

Needless to say, the past two years have applied the "acid test"; now the storm has been weathered and Palo Verde, like other parts of California, is "coming back" very rapidly; in fact has "come back" already.

While farmers of the East and middle west still are wondering just where they struck them, those of Palo Verde Valley have regained their bearings and resumed, with heads high, their forward march to permanent prosperity.

Sunflowers

Depends on Meaning

"Well, my boy, do you like to go to school?"

"Yes, goin' to school and comin' from school are all right, but it's a awful long time between!"

The "Green" Hand

His Nibs—"I say, the engine won't start, no matter how much I prime the carburetor."

The Boss—"How did you prime it?"

His Nibs—"Why, the same as the pump, of course! I poured water in it."

HERE IS THE OPPORTUNITY OF YOUR LIFE!

A small farm in the Palo Verde Valley in Southern California.

Where 10 to 20 acres will provide an income for life.

We are handling railroad lands and can offer lowest prices and easy terms.

Write for folder and map.

LAND DEPARTMENT,
1110 Chapman Bldg.,
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Send me information about opportunities in the Palo Verde Valley, California.

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You Need a Farm in Canada

If you are to secure that independence, success and prosperity which has been the reward of thousands of American farmers who have preceded you.

¶ These farmers knew of the rich tracts of Canadian Pacific agricultural land for sale in Western Canada at low prices—open prairie, partially wooded or park lands—all virgin, fertile and productive. They knew they could not obtain such lands elsewhere at such prices—at an average of $18 per acre.

¶ They knew that Western Canada has carried away, year by year, first international honors for wheat, oats, barley and livestock.

¶ They knew of the success that had been won by farmers from their own state who had preceded them. They knew that Canadian farm values are steadily increasing and that each year they delayed they would have to pay more to purchase desirable farms.

¶ They wanted larger holdings for their growing families. They knew they could secure sufficient land upon terms unobtainable elsewhere—20 YEARS TO PAY.

¶ As a result, 16,000 American farmers took advantage of their knowledge and moved to Western Canada last year.

¶ In Canada the government and the railroads help the farmer in every possible way. It is to their interest to do so. Taxes are moderate; laws are just; transportation facilities and markets are excellent. Language, social customs, religion, money and other conditions are the same as in the United States.

Ask the Canadian Pacific about Canada — CANADIAN PACIFIC RAILWAY

Thousands of American farmers have made prosperous homes in Canada. There will be more this year. Can you afford not to follow them?

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Made of finest quality waterproof leatherette. Designed to protect its contents in all kinds of weather. Convenient for the busy shopper who does not care to burden her arms with many small parcels.

It is stylish in appearance and is right in style at the present moment.

It retails at $2.00

This bag is a wonder. It is a combination of hand-bag with change purse attached and opens into a Universal Shopping Bag. It can be used in the following ways:

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Please send me the Handbag described above for which I enclose 90 cents.

Name .....

R. F. D. ..... Box.....

Post Office ..... State.....

Work—Food Time

Men now need foods that *energize!*

NOW'S the season when men need *energy* to withstand the hard work of the long farm day. And *work*-foods—foods that provide this energy—should be the rule at all farm tables. For food is the body's *fuel*. Work burns it up and it must be renewed in full each day.

Raisin pie is the great American energy-dessert.

A great morning fruit dish is stewed raisins served with cream. Rich in energy and iron. A fine laxative effect.

Raisin Pie

2 cups Sun-Maid Raisins, 1½ cups boiling water, ½ cup sugar, 2 tablespoonfuls cornstarch, 2 tablespoonfuls lemon juice, 1 tablespoonful grated lemon rind, juice of 1 orange, 1 tablespoonful grated orange rind, 1 cup chopped walnuts.

Cook raisins in boiling water for 5 minutes, pour in sugar and cornstarch which have been mixed. Cook until thick, remove from fire and add other ingredients. Bake between two crusts. Walnuts may be omitted if desired.

All measurements for this recipe are level.

Raisins furnish 1560 calories (a unit of food value measurement) of energizing nutriment per pound—more energy than eggs, milk, potatoes and most meats supply.

So a luscious raisin pie is ideal at this time. Also rich in food-iron—good for the blood.

Digestible because the raisin's pure fruit-sugar is in practically predigested form.

Men feel the refreshment from it almost immediately after eating. They'll thank you for a pie like this.

Try making one according to the recipe printed here, using your own delicious crust. The juice forms a luscious sauce. It makes a perfect pie.

SUN-MAID RAISINS

Always ask for **Sun-Maid** Raisins, produced from California's choicest table grapes.

Tender, thin-skinned, juicy—the finest raisins grown.

Prepared and packaged in a great modern glass-walled plant in a famous California valley, they come to you immaculate, wholesome and always good.

Raisins are 30 per cent cheaper than formerly—see that you get plenty in your foods.

Seeded, blue package (**seeds removed**), best for pie and bread; Seedless, red package (**grown without seeds**), best for stewing; Clusters (**on the stem**). A delicious quick dessert.

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Mail coupon for **free book** of more than 100 tested recipes for nutritious raisin foods.

Blue Package (seeded) best for pie and bread.

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Dept. B-705, Fresno, California

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Dept. B-705, Fresno, Calif.

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Street .....

City ..... State.....

90 EGGS AND THE HEN IS JUST PAYING HER "KEEP"
120 EGGS AND THE HEN IS JUST PAYING A PROFIT—

but why stop with 30 EGGS

AUTHORITIES estimate it takes 90 eggs a year to cover the "keep" of a commercial hen—and 120 eggs to make just a profit. But—there's the rub! How are you going to get the extra eggs—the eggs that make the big bank-book difference between just a *profit* and a *just* profit?

The average hen under natural range conditions will produce only about 75 eggs a year. Yet *proper feeding and care* have developed commercial flocks that average 120 to 150 eggs a year per hen. Some flocks will range even higher.

It's all a matter of feed and care. The feed must be clean, tasty, varied. The elements of an egg are derived from many sources. Therefore, the greater the variety of feed ingredients the better. SURELAY contains a dozen tested ingredients balanced and blended according to the famous Sperry formula. It is made so good, so uniform, so tasty, that every time Mrs. Hen takes a peck at it she is eating something that goes into the making of an egg.

You know that Nature provides each hen with a certain number of embryonic ova. These are minute yolks which, under ordinary conditions, will take the hen a number of years to produce. But that isn't very profitable. So it is your job as a poultryman to secure the most eggs in the least time—and keep the hen in *good health* all the while.

SURELAY will give every hen in your flock an opportunity to pay not only her board bill but pay *you* a profit. This prime quality feed calls the "egg-making department" to order—makes it produce—and keeps the hen in "fine fettle" all the time.

Ask your dealer for Sperry SURELAY in the yellow-striped bag; and send for "Makes Hens Happy"—a practical guide to more eggs and more money. Simply clip the coupon and mail today.

SURELAY

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ORCHARD and FARM

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JUNE, 1922

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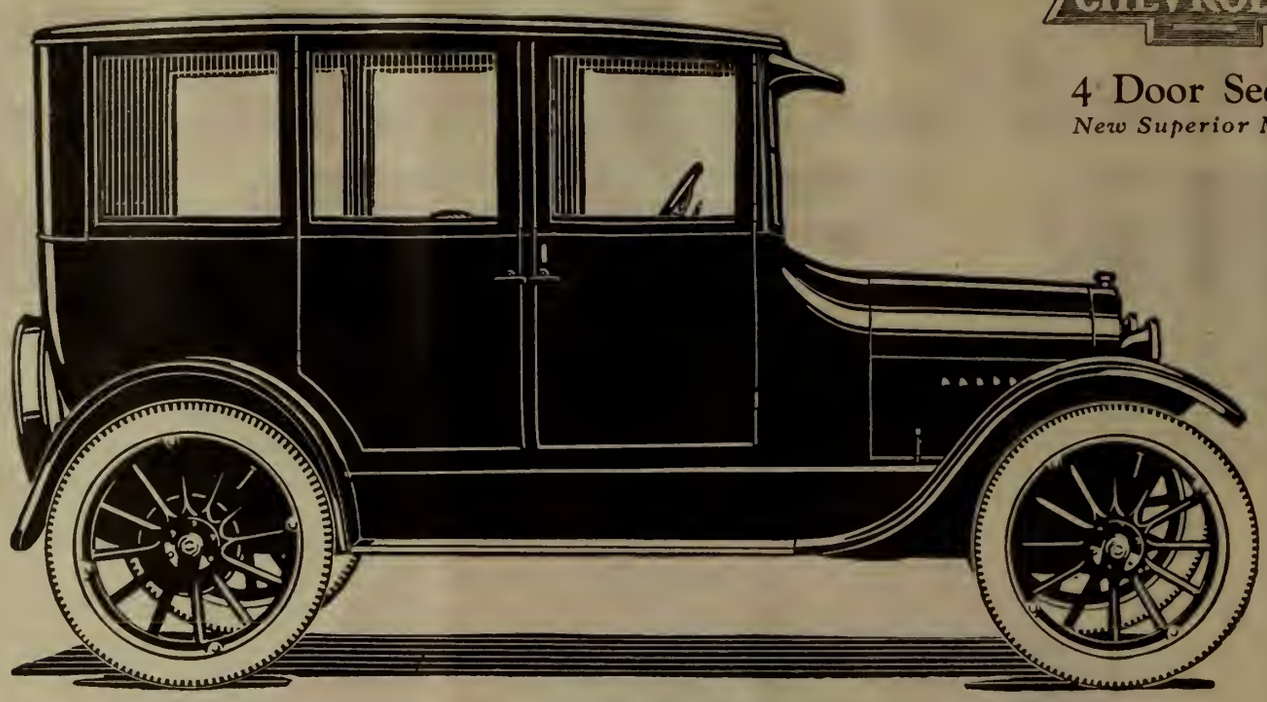

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OUR EDITORIAL POLICY

ORCHARD and FARM is a magazine of, by and for agricultural people. We believe that to the tiller of the soil is due the best that life affords. We believe that he is the bulwark of the Nation. We honor him as the basic producer. His problems are our problems; his triumphs, our triumphs; his joys and sorrows, ours. To record his achievements and expose the duplicity of his enemies; to fight for and with him; to give him genuine help and practical information, to assist, entertain and inspire every member of his happy household—that is the policy of ORCHARD and FARM.

ORCHARD and FARM

ESTABLISHED 1888
Published Monthly by Country Life Publishing Company
1111 South Broadway, Los Angeles, California
"THE SILENT PARTNER OF THE SUCCESSFUL FARMER"

YOUR QUESTIONS ANSWERED

ORCHARD and FARM is an institution of service. Subscribers may receive free of charge answers to questions upon any agricultural subject. Through its large staff of specialists, and its close contact with authentic sources of information, this magazine is able and willing to serve any subscriber who requires aid or information. Be sure to write name plainly and to give complete address, including street, R. F. D., or box number.

VOL. XXXIV Entered July 16, 1917, as second class matter at the Post Office of Los Angeles, California, under act of Congress of March 3rd, 1879. Subscription price $1 a year. NO. 6

Pithy Paragraphs

Nowadays almost any one who has dealt in pig iron, raised Cain or acquired a sheepskin feels qualified to give advice to the farmers.

A noted doctor asserts most of us are digging our graves with our teeth. He said a mouthful."

If neighbor's little Mary pulls our pet chrysanthemum out by the roots, she's incorrigible. If our own little Johnny does the trick, he's "cute."

With shoes still selling at $10 or $15 a pair, Uncle Wiscacre is wondering when he will be able to get a bid on some hides he has had in storage for two years.

To the narrow mind every question has but one side.

If the wireless craze never does anything else for our community, we who use the old telephone party line shall be eternally grateful to the man who sold a radio set to Miss Seraphima Simpkins.

No man appears to be braver or bolder because he is wearing a chip on his shoulder. Sooner or later some one will remove it who's perfectly able—and willing to prove it!

Jas. C. Knollin
Editor

IT SUITS HIM!

"I have been looking at numerous farm magazines of this State, as well as those published in the East, and I am glad to be able to say that I have not found one that suits me as well as the ORCHARD and FARM."
—Ronald A. Boring, Orange, Cal.

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Private Jones Was Frank About It!

Candidates were being examined for the regimental band. The officer in charge, after braving a few notes from Private Jones' trombone, asked him the usual questions:

"Your name?" thundered the examining officer.

"William Jones, sir."

"Your age."

"Twenty-three."

"Your rank."

"I know it, sir," answered Private Jones, mournfully.

Not all of us are as frank in confessing our faults, which is just as well, perhaps. It is better to let the faults speak for themselves (when they can't be hidden), and advertise the virtues.

Speaking of advertising—did it ever occur to you that hundreds of new products are introduced to the public every year through advertising before a word is said about them in articles or in official reports? No one can be strictly "up-to-date" nowadays who is not a reader of advertisements. Use the questionnaire below as a convenient means of broadening your knowledge as well as supplying your wants. *"You haven't read the magazine until you've read the ads."*

Alphabetically Arranged Advertising Directory

IMPLEMENTS, MACHINERY, FARM ENGINEERING, IRRIGATION—

- **Building Supplies**—How can I save money on building supplies? 23
- **Concrete Mixer**—What type is recommended especially for farm use? 27
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- **Engines**—Where can I secure farm engine at a special price? 29
- **Hay Press**—What is the cost of a reliable machine? 20
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- **Paint**—Where can I secure free information on how to do painting? 11
- **Pipe**—Is iron pipe suitable for irrigating purposes? 21
- **Pumps**—What type assures highest efficiency? 12
- **Pumps**—Where can I secure information concerning pumps of all kinds? 19
- **Pumps**—How can I tell the value to me of a pumping plant? 36
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- **Melon Aphis**—How can I control this pest? 12
- **Nut Journal**—What journal gives expert advice to nut growers? 19
- **Rhubarb**—From what type may I expect big returns? 11
- **Rhubarb**—What returns may be secured? 22
- **Sprays**—What type is made especially for use on citrus trees? 19
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- **Poultry Feed**—How can I be assured of increased egg production? 18
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- **Irrigated Vineyards**—Where can I secure profitable grape lands, close-in, on easy terms? 22
- **Oil**—Who furnishes free information on Texas oil fields? 14

Among Ourselves

A bull in a china shop scarcely would create more of a sensation than did a certain cattleman who took up vegetable gardening under glass. But he made more money from hothouse cauliflower than from Hereford calves and now his critics are cowed! O. H. Barnhill has written his remarkable story for ORCHARD and FARM. Coming soon! Watch for it!

Is it worth while to attempt to keep rural young folks upon the farms? Read what three women subscribers think about it. Page 5, this issue.

Ho! boys and girls! Prize winners are announced in this number. Did you write one of the winning stories?

What of the *Water and Power Act?* ORCHARD and FARM will publish next month an interesting discussion of this burning issue! It affects, directly or indirectly, every farmer in the State. (A lot of good things coming in the July issue!)

ORCHARD and FARM is making new and surprising combination offers, in clubs with America's best magazines. No doubt we can save you from 25 to 50 per cent on publications you are now reading. By all means write for circular describing these money-saving offers!

SUBSCRIBERS SAY:

From Ranch Manager—Enclosed is check for one year's subscription to your journal. I have been reading my neighbor's and find that a ranch is not complete without ORCHARD and FARM.—D. N. Orr, Manager, Uhl Ranch, Lower Lake, Cal.

Valuable Hints—I certainly enjoy ORCHARD and FARM and have found many valuable hints in it.—Mrs. D. D. Finley, Goldfield, Nev.

Takes No Chances—You have a fine little magazine in ORCHARD and FARM, and I have recently become a subscriber in order to assure myself that I will not miss any numbers in future.—H. P. Rogers, Burbank, Cal.

THE "GREEN" HAND

The Boss—"John is a pretty steady man, isn't he?"

Straw Boss—"Steady? Yes! Practically motionless, in fact!"

Man, like a good ship, may be steady and yet make rapid progress. But John's idea of a steady job seems to be one involving only lost motion. In his youth he attended church and heard the minister say "be seated." He thought it one of the commandments and has been obeying ever since. We cannot "command" our subscribers to renew before expiration but we do suggest that there will be a steady stream of good things in the numbers to come, as well as many hints on how to do away with lost motion. Are you with us?

THROUGH THE CAMERA'S ALL-SEEING EYE

A LIABILITY was converted to an asset by E. J. Linne of the San Fernando Valley, when he used stones picked up about his place to embellish his new home. Illustrated above.

THIS COOL NOOK was discovered on the lawn of F. W. Getschel's poultry ranch home near Los Angeles—a blessing in hot weather the owner says.

"DINNY PEEGS" is what Bobby calls his pets. Formerly regarded as a "plaything" for children, the guinea pig, or cavy has become an important commercial product, being used both for meat and for laboratory experiments. The animals shown above are from the cavieries of M. S. Genor.

WHO WOULDN'T CROW over the ownership of a rooster valued at $1250? This White Leghorn, "California Bob, Jr.," belongs to Ed Regan of Petaluma. His spurs are nearly as long as his pedigree and he is "some scrapper." (International Photo.)

THE ORIGINAL STRAW MAN Illustrated above was constructed by Indians of Mexico. Horse and rider being woven entirely of weeds and straw. (International Photo.)

THE RIPE OLIVE is coming again into its own. Here are shown women workers, hand-sorting the fruit just before canning, in one of California's big packing plants. (Publication of J. J. Hoey's olive article has been postponed until the July number.)

THESE THREE CRONIES are among the most famous men of their time. Left, Luther Burbank, who works exclusively for ORCHARD and FARM. Center, Henry Ford. Right, Thomas A. Edison. All these great men are intensely interested in agriculture.

ORCHARD and FARM

VOL. XXXIV. JUNE, 1922 NO. 6

Keeping the Children on the Farm

THERE are many, many ways we can help our boys and girls to learn to love and appreciate farm life.

First, we should see that the general atmosphere of the home is one of cheery co-operation between parents and children. Then they will want to take a hand in all the duties suited to their strength. Let them do so even if they are in the way sometimes. They learn to do by doing.

FIRST PRIZE LETTER

Let the little tots have their pet animals and their own vegetable and flower beds. Teach them how to care for these properly. Then, as they grow older, give them a share in the financial returns of farming operations.

STUDY CHILD'S NEEDS

Some children will enjoy having a patch of ground to call their own and raising just what they please upon it. Others will take great pride and delight in the ownership of a pig, a calf, a colt or a flock of chickens. My father used to pay his children the same wages for picking berries that he paid his other help. Whatever the special effort of the child, be sure he receives the reward of his labor. Let him have no memory of unfair play from his parents.

THE CLUB IDEA

The idea of community clubs—pig clubs, canning clubs, poultry clubs—for boys and girls is an excellent one. Just as with grown-ups, more zest and enthusiasm is aroused where there is healthful rivalry and competition.

All the modern conveniences in the home and modern machinery outside that we can possibly afford will help to keep the boys and girls on the farm. Yes, and good clothes, too. They like to appear as well dressed as their city cousins.

Help them to observe and learn about the common birds, trees and wild flowers. When once they become acquainted with these, they will find life-long enjoyment in their association.

HABITS OF READING

Good reading matter is so important in the farm home. The habit of reading, once formed, makes many cheap amusements of the city lose their attraction. Teach them to read the boys' and girls' columns in the farm papers, and the farm bulletins from the Government. Like the farmer himself, they will gather inspiration from these.

Keep before the boys and girls the advantages of a course at the State Agricultural College. Help each one to get at least one year.

"TAKE THEM WITH YOU"

Take them along when you go to town, to the stock show, or the farm meetings.

Be shorter hours than we keep and more frequent. Any of us work faster when we are fishing trip or a picnic in prospect.

Make the farm home as pleasing in every possible—neat and attractive with flowers, trees and a place where your friends will love to come at social times.

Visits to homes of their kind will most often be

MRS. [illegible] MICHENER,
Monte, Cal.

These Letters Indicate What Women Readers Think

IS IT worth while to encourage our rural young folks to remain in the country? "Yes," was the unanimous opinion of subscribers who took part in ORCHARD and FARM'S recent contest.

And to any one who has observed the occupation of thousands of acres of our best farm lands by aliens of all colors and creeds, while American families moved to the cities by wholesale, the answer should be equally clear.

But, as to ways and means, opinions differ. The accompanying letters were selected by a committee of impartial judges as the best, most interesting and most helpful among scores submitted.—Editor.

CHILDREN can be kept on the farm by arousing and keeping their interest in country life.

SECOND PRIZE LETTER

This responsibility must be borne principally by the parents, who must be the progressive type in order to get results. The parents should understand scientific farming, so that the income will be sufficient to provide the family with modern conveniences and such means of culture as good books, magazines and musical instruments. The country homes should be better supplied, if anything, than the city homes, as the young folks in the country are more dependent upon their homes for entertainment.

There must also be means of recreation on the farm, such as a tennis court and a croquet ground, and young folks should have week-end visitors of their own ages, with the use of a room for games or dancing. If the parents are wise, they will join in these recreational activities to a certain extent, not only for their own benefit, but to show the children their enthusiastic approval of the same. If the children can be kept happy during their leisure time the problem is about half solved.

The question of remuneration, however, is an important one. Children should be given more than their board and clothes when they are old enough to assist materially with the farm work. A great incentive for young folks to stay at home is a little spending money of their very own, to do with as they like. And when they are through school they should be offered either a partnership in the farm or a wage equal to that of their friends holding office positions in the city.

LOVE OF NATURE

Above all, a love of nature and an appreciation of her sweet influence should early be cultivated in the hearts of the children.

Should the community assume the responsibility of holding the young people on the farm, the following method could be successfully followed:

Introducing an interesting course in agriculture into the school; having regular meetings with a farm adviser, with a program to attract the young people; having prize contests in various lines of farming; having occasional "sociables" for getting acquainted and for recreation.

MISS IDA I. HILL,
Tuolumne, Cal

WE LIVE on a dairy ranch in the beautiful Sierras. We have a family of eight children, of whom neither the two oldest boys, 16 and 18, nor the two girls, 12 and 14, have any idea of leaving a ranch home to go to the city. The oldest boy spent three months in Oakland and San Francisco lately and came home more pleased than ever with the farm. Even with "chores" included, he likes the country best.

THIRD PRIZE LETTER

We are far from being well-to-do, but believe in having all machinery, tools, household utensils, running hot and cold water, etc., necessary to make things as convenient as possible.

We join our children in games and keep a goodly supply on hand. We allow lots of company and have refreshments, games, etc., thus making the home attractive to other children and pleasant for our own.

PRIVILEGES ALLOWED

The children are allowed to use all tools and make many things, such as skis, sleds, etc.

The girls use my good sewing machine for sewing all doll clothes.

Each has chores to do. Boys and girls alike can milk, do chores, cook, etc., being ready in emergencies to do each other's work. In haying, they work in the fields. We do not pay them for this, but put them in a position to make their own spending money.

Their father takes them in as partners in the potato raising and helps them market their crop. They raise bees, turkeys, ducks, chickens, etc., of their own, buying the stock and feed themselves, and we buy what we need of their produce and they sell the rest elsewhere. All money they earn outside of the farm is their own to use

(Continued on Page 28)

His Kingdom

By Jason Wells

DEAR little lad of the trudging feet,
Show us the rendezvous where you meet
With the shy wood-folk. And we long to know
The path to your glen where the violets grow!

Lead—and we follow—to ripple and pool
Where sly trout lurk in the waters, cool.
We ask but to listen and see and feel
In your wonderful Kingdom of things that are real.

Brave little lad, with your sun-browned face,
What would we give for your lithesome grace—
Your red, red lips; your sparkling eyes,
And your lore of the Land of the Open Skies!

Ah, would that Life might never claim
Your innocent heart for its great, grim game—
Nor shatter, with sorrow, your pulsing joy.
But where we have gone, you must follow, my boy.

Yes, follow our path—though fain would we
Our lagging steps retrace, and see
The beautiful world through the eyes of you—
Your Kingdom of things that are real—and true.

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—Illustration reproduced through courtesy of International Harvester Company.

Timely Orchard Hints for June

By George P. Weldon

CONTRIBUTING HORTICULTURAL EDITOR OF ORCHARD AND FARM

It Pays to Thin Peaches

NOT more fruit, but *better* fruit should be the slogan of the peach grower. How often do we find an overloaded condition of trees, with fruit so small that no one cares to buy it! Irrigation will not cause it to make sufficient size for the best trade. Yet we find each season many growers who have failed to thing heavily enough for best results, and who have attempted to size the fruit by applying an abundance of water. This may have some effect, but disappointment is the rule.

George P. Weldon

Peaches, more than any other fruit grown, require heavy thinning and the grower who hasn't discovered this fact is not yet awake to the possibilities of his trees as heavy producers of first class fruit. Of the six usually essential orchard operations, viz: spraying, pruning, thinning, cultivation, fertilization and irrigation, none ranks higher in importance than thinning, yet perhaps none is more often neglected.

Thinning is a necessary part of the work of growing a good crop of superior peaches. It is doubtful if any other one factor will pay as big returns.

A deplorably low percentage of the fruit from our orchards will pass as first grade, either in the cannery or when packed fresh. In one of the leading Southern California canneries the past season, growers who delivered to this cannery received pay for 23 per cent "A" grade, the rest being "B" and "C" grades. *This grading was unquestionably the result of too light thinning.* Had the growers thinned properly, there is no reason why a goodly share of the fruit which was rated lower than "A" grade should not have been packed with the best, which is the grade that lifts the mortgage and buys automobiles.

WHEN TO THIN

In connection with the *importance* of thinning peaches, the time that the work may best be done also should be emphasized. Too early thinning may reduce the yield, when followed a little later by the so-called "June" drop, which comes earlier than June in California. Too late thinning, on the other hand, may fail in sizing the fruit sufficiently. Of the two extremes, the latter is the more dangerous, as peach trees have a tendency to set very heavy crops, and not even a severe drop will thin them enough to render unnecessary this work on the part of the orchardist.

Thinning should be done in California during the month of May. Any time after the peaches have shed the jackets and it can be seen that they are sticking well, the work will be in order.

HOW TO THIN

It is not easy to lay down fixed rules for guidance in the thinning work. As most thinners will not take off enough, one can scarcely be too urgent in demanding painstaking work. When one looks at the ground after pulling off the fruit from a heavily laden tree, he is apt to question the judgment of the fellow who told him to be so severe.

If he is experienced, however, he will not let this worry him in the least, well knowing that in two weeks' time the fruit on the trees will have sized to a point where that which was sacrificed will not be missed. But every one who owns a peach orchard knows that it is difficult to find conscientious men who will pull off enough fruit. One man, in speaking of his experience in thinning, said: "I can't pull off enough fruit when thinning my own trees, but when thinning those belonging to some one else it is not so difficult."

DISTRIBUTION OF FRUIT

A good thinner will pay close attention to the distribution of fruit upon a tree. If there is even distribution and the tree is carrying more than a capacity load on all its branches, uniform spacing of the fruit will be in order. If, on the other hand, only a part of the tree has a good load and the rest is light, more fruit should be left on individual twigs than in the former case. A spacing of from six to eight inches in many cases is about right for most varieties of the peach.

Preference should be given to the fruit hanging near the base of a twig rather than near the tip. As a general rule, no two fruits should be allowed to touch each other, and all clusters should be broken. If there is inferior fruit, due to the attack of thrips or other cause, this should be removed and the undamaged fruit left on the trees. By paying careful attention to this matter the grower may improve the grade of the fruit considerably.

There is a tendency for some varieties of the peach to develop in pairs, also triplets and quadruplets are not uncommon. Where these occur they should be removed when possible instead of the single peaches. If malformation is so common that there are not enough single peaches for a crop, a careful twist made by grasping two parts of the peach with the thumb and first finger of each hand will sever one from the other with little or no damage to the fruit that remains.

Some growers do not consider it necessary to break apart such peaches as these, because it is usually the case that one of them far outgrows the other, the latter finally dropping off or drying up and adhering to the full-grown peach at maturity as a harmless rudiment.

Some of the ideas presented in this article, it is hoped, may suggest better methods of thinning to peach growers generally, but as it is being written the writer has in mind principally the large number of growers new to the business. To them the work of thinning will be especially hard at first, and for them it is hoped that there may be a few hints that will mean better peaches and more money.—G. P. W.

Propping Heavily Laden Trees

HEAVY production is the earnest desire of every fruit grower, and no stone is left unturned in an effort to make trees bear maximum crops.

This desire sometimes results in over-production, to the detriment of both trees and fruit. Yet trees may mature a crop of good, saleable fruit and make a satisfactory growth at the same time, even when the load which they carry is so heavy that propping becomes necessary.

In another article the writer has emphasized the importance of thinning. When this work is well done the necessity for propping will be decreased. Also the proper kind of pruning will lessen the amount of propping to be done, while improper pruning may occasion the use of many props.

METHODS OF PROPPING

When propping is desirable the fruit grower has his choice of several good methods. The two which appeal to the writer as being the more practical are illustrated herewith.

Many growers prefer the ordinary pole prop, with bent wire on end to receive the branch, as shown in figure 1. These props are effective when used in large enough numbers, but have the disadvantage of taking up considerable room on the ground, thus interfering seriously with cultivation, irrigation and sometimes other orchard practices.

In figure 2 is illustrated the ring, wire and screw-eye method, which overcomes most of the objections that apply to the wooden props, and which performs the work in a practical and satisfactory manner.

METHOD OF INSTALLING WIRES

The installation of these wire braces is not difficult. The screw eyes are first inserted into the larger branches at convenient points, where they will relieve the strain to the best advantage. The wires, which may be only baling wire, are strung from a central ring to each of the screw eyes. The load in this manner is well distributed upon the brace wires, and there is little danger of breakage.

To those who are afraid to allow trees to bear heavy enough to require bracing, it may be said that the amount of fruit a tree should carry will depend a great deal on the conditions where the tree is growing.

DEPENDS ON CONDITIONS

With good soil, healthy trees and plenty of moisture, there is not the danger of overbearing that occurs where the opposite conditions exist. In other words, if everything is favorable for normal growth and heavy production at the same time, trees are not going to be damaged by a big crop of fruit, and if braces are required to keep the tree from breaking under the strain, their use should not be discouraged.

It is a fact, however, that very heavy production one season may be followed the next season by moderate or light production, and the grower should study his problem under the existing conditions and act accordingly.

Control of the Nematode, or Eel Worm

THE presence of little nodules or swellings upon the roots of plants other than the legumes, should be looked upon with suspicion.

The common eel worm, which is one of the round worms known as nematodes, is a common pest of various kinds of growing things. It may be found in nursery stock and numbers among its hundreds of hosts are practically all the truck and field crops.

CEREALS IMMUNE

There are exceptions to most rules however, and in this case a few plants seem to be practically immune. Among those that are seldom if ever attacked are the grains. Therefore if a field which has become infested with the pest during the production of potatoes or some other susceptible crop is sowed to grain in the fall or winter the first step in the control of the worm will have been accomplished.

After the grain is harvested in the spring, the land should not be allowed to produce anything, even weeds, for the rest of the season.

SUMMER FALLOW EFFECTIVE

The absence of any host plant upon the land and a thorough drying out during the summer months will do more toward ridding the field of the pest than anything else. If this same program is followed for a second season, still better results will be attained.

This treatment is employed by nurserymen, who must be careful that the soil upon which they are growing stock, is free from eel worm, and other tillers of the soil can follow the methods to advantage in clearing up infested areas.—G. P. W.

Spraying Insurance

THE term "spraying insurance" is familiar to every fruit grower yet few stop to consider what it really means.

Insurance against loss by fire, lightning, hail or cyclone is something that is easily understood, but when the complications of the spraying process are involved there are difficulties.

AN ABUSED TERM

Perhaps the term is used more by the salesman handling spray materials than by anyone else. It is so easy and sometimes convincing to say to a prospective customer, "You can't afford to neglect your spraying insurance any more than any other form of insurance." A splendid statement if it were true—but unfortunately it is only half true and therefore borders on falsehood.

Spraying when certain insect pests or fungus diseases are present, with the right materials at the proper time, may insure against heavy losses.

But spraying when nothing is present to spray for; or spraying with improper materials, or at the wrong time is only money wasted.

KNOWING HOW AND WHY

Instead of spraying from habit or because some one else is spraying, the fruit grower should become informed about the commoner diseases and pests; he should have also a thorough knowledge of spray materials, in order that spraying may be properly and effectively done.

The only safe rule to lay down regarding spraying is: Spray when there is some injurious pest on the trees that the spray will kill. If nothing in the way of insects or diseases is present then save the cost of the spraying operation.—G. P. W.

PRACTICAL POINTERS *IN FEW WORDS* for Busy Farmers

Cover Crop Demonstrations—Experiments have been conducted in Sutter County with three varieties of cover crops—purple vetch, Melilotus Indica and common vetch. The productiveness of purple vetch has been demonstrated by F. L. Hutchinson, who received a yield of 7.8 green tons an acre. Melilotus Indica produced an average of 4.8 tons an acre in the Hutchinson orchards. Dr. E. S. Moulton's experiments with purple vetch and common vetch resulted in a production of the former of 6.6 tons to an acre and of the latter variety, 5.4 tons.

Experimental plots conducted by Andreason Brothers were planted as late as December 14 last. Purple vetch yielded 1.8 to the acre, and Melilotus Indica an average of .3 T.

Demonstrations in irrigation of vetch by the Andreasons were interesting. A plot of Melilotus Indica, watered one month after it had been planted, in contrast to a yield of 3.3 tons an acre on an unirrigated area, had an average production of 7.8 tons an acre.

Lime was used by A. J. Clarke as a soil stimulant for Melilotus Indica. One plot in which one ton of lime was placed yielded 3 tons of cover crop an acre, while earth in which two tons of fertilizer were used produced an average to each acre of 6.75 tons of Melilotus Indica.

Wonderful Effect of Summer Silage—Four dairymen in Marin County, California, last year fed silage during the summer for the first time. The silage feeding season extended over the months of June, July, August and September. During this period their four herds produced 7930 pounds more butterfat than during a corresponding period in 1920. This increased production came at a time when butterfat prices were advancing and it increased the receipts from the four herds just $3709.14. Furthermore, this was clear gain, since the production of the herds during the remainder of the year was not adversely affected. In fact, the four herds produced 19,427 pounds more butterfat in 1921 than in 1920. There were fewer cows in all of the herds than during the previous year. Fall sown grain was used for the summer silage.

Using Seepage Water—California receives the credit for a unique engineering practice now being imitated in other States; namely, storage in natural reservoirs of overflow and seepage water.

Many districts have gravel or porous subsoils capable of storing or retaining a great amount of water. In several instances the winter and spring flow of mountain streams has been made to spread out over gravel beds, the water later being pumped for irrigation purposes. In some localities the topography is such that floods may be prevented and water carried underground into the valleys, raising the water table and providing a readily available supply for pumping or for artesian wells at practically no cost for equipment. Many ranchers are applying this principle on a smaller scale in the control of streams and washes affecting their properties.

Anthrax: How Prevented—In California anthrax (a serious livestock disease sometimes transmitted to man) [illegible]s almost exclusively at low ele[illegible]ns and is confined principally [illegible] the interior valleys between the [illegible] part of Tehama County on [illegible] north and the southern end of [illegible] County on the south with less [illegible] outbreaks through Los An[illegible] Ventura and the lower eleva[illegible] in the [illegible] counties south of [illegible] Francisco Outbreaks have been [illegible] from a number of other [illegible] where anthrax [illegible] to exist, prevention [illegible]n of the cattle- [illegible] accomplished by [illegible] infected areas or [illegible] exposed suscep- [illegible]e are different kinds of anthrax vaccines on the market and for this reason advice as to the proper kind to use should be obtained from a reliable source. Careless handling of the product is dangerous. Do not spill the vaccine on the ground. The California Department of Agriculture advises that empty vials and bottles which contained anthrax vaccine should be deposited in a fire and heated to the melting point. Anthrax is a most dangerous cattle disease. Remember the slogan—prevention! — Dr. J. P. Iverson.

Prizes for Letters on Cover Crops

FOR the best letter from a subscriber, received before June 20, on the subject, "My Experience With Cover Crops," ORCHARD and FARM will pay $20.

For the second best letter, ORCHARD and FARM will pay $10.

For the letter adjudged third in interest and value, ORCHARD and FARM will pay $5. And for each additional letter considered worthy of publication, we will pay $2.

A committee of competent, disinterested judges will decide upon the winners, and should there be ties, the full amount of the prizes involved, will be paid each of the winning contestants.

No letter may exceed 1,000 words in length.

What have cover crops done for you? What "Don'ts" have you learned in using cover-crops? What have you discovered about varieties, seed, planting, irrigation, plowing? If you consider the use of cover crops essential, tell why.

A chance to earn a prize, and at the same time, to help fellow-subscribers. Write your letter NOW, before you forget. Address The Editor, ORCHARD and FARM, 1111 South Broadway, Los Angeles. $40.00 (or more) in cash prizes. Winners announced in July issue.

Frequent Irrigation Necessary to Set Bolls of Pima—The number of bolls set during July and August largely determines the size of the crop of Pima cotton in the Salt River Valley of Arizona. Experiments conducted by the United States Department of Agriculture indicate that effort should be made to stimulate the setting of fruit to the fullest extent during the summer months, especially in areas visited by relatively early frosts. It was found that this could be effected by irrigating soon after the first flower buds begin to form and at frequent intervals thereafter.

Repair Work in Tree Surgery—In repair work (tree surgery) a few fundamental principles must be observed in order to secure permanently good results. These may be summarized briefly as follows:

(1) Remove all deal, decayed, diseased, or injured wood or bark. When the bark is on a limb this can be done best by removing the entire limb; on a large limb or on the trunk it may mean at times digging out the decayed matter so that a cavity is formed. (2) Sterilize all cut surfaces. (3) Waterproof all cut surfaces. (4) Leave the work in the most favorable condition for rapid healing; this often will mean filling or covering deep cavities. (5) Watch the work from year to year for defects, and it any appear attend to them immediately.

Taking the Fire Out of Hay—The risk of fire from spontaneous combustion is mows and stacks may be done away with almost entirely if hay is put up only when properly cured. The heating process begins as a fermentation produced by the growth of bacteria in moist hay. When conditions are right the temperature mounts until the organisms that started the process are killed; from then on the heating is the result of chemical action—a slow oxidation when it is away from contact with the air and a rapid oxidation, or fire, when the heating area breaks through to the open air.

Alfalfa and clover and other hays made from rather succulent plants cause the most trouble from heating, and they should be given particular care in curing.

When a mow or stack has become badly heated there is a strong temptation to go in and stir up the hay, but often this is the worst thing that can be done. Admitting air to the hot center of fermentation may be just the thing needed to start a fire. If air does not get in, a part of the hay may be charred without starting a fire; gradually the mow cools and the only loss is the hay that has been carbonized. However, in the early stages when the hay is heating, it is sometimes advisable to move hay from one mow to another or to restack. But be sure it is not too hot.

Slow combustion inside the mow can be detected by a peculiar sooty odor or by smoke that is irritating to the eyes.

Danger of spontaneous combustion is not confined to hay. It may occur in damp fodder and straw, as well as in bins of moist grain and seeds. Cloths, waste, and sawdust saturated with organic oil of any kind—linseed oil or cottonseed oil, for examples—are even more subject to spontaneous combustion than hay. Such oily materials should not be allowed to accumulate or be left piled up in corners where the heat generated cannot escape. Oiled mops or dust cloths used in the house and oily waste or rags used in the garage or about the barns should always be kept in metal containers with air-tight metal covers.

Useless to "Renovate" Alfalfa?—Accumulating experience has exploded some old notions about the value of cultivating broadcast stands of alfalfa. It has been found that harrowing a field of alfalfa ordinarily does not increase the yield; neither does it prolong the life of the stand to any noticeable extent. The modified spring-tooth harrow does not injure the plants, but the disk often kills many and reduces the stand. Some sort of cultivation appears advisable in irrigated regions where the water carries a great deal of silt or where the soil has been compacted by the tramping of cattle pastured on the alfalfa. Many growers, however, now believe there is usually little to be gained by cultivating broadcast fields when the stand is good. If weeds and grass work in and reduce the stand it is better to plow up the field and put in another crop for a year or two. It is hard to thicken a thin stand by cultivating it and sowing more seed; in fact, it is a waste of time, the U. S. Department of Agriculture says.

Post-Holes in Adobe—Having occasion recently to make post-holes in hard soil, with an auger-style digger, I found the work was simplified by the following plan: A number of holes were started by boring down three or four inches through the top crust, and these shallow holes were filled with water. Returning to the first hole, I drilled a little deeper, and upon encountering hard soil again, poured in more water. In this way, working back and forth along the row, I dug all the holes with the minimum of labor, the water soaking down several inches in each while I was working on the others. —Henry Rorich.

Trap Spray for Grape Leaf Hopper—To control the troublesome pest, The Grape Leaf Hopper, eastern vineyardists are using a so-called "Trap Spray" consisting of a series of vertical nozzles set at different angles so as to spray the row from both sides at the same time, thus trapping the agile hopper between two clouds of nicotine. Detailed information concerning this method may be obtained from the Pennsylvania Experiment Station, State College, Penn.

When Should Alfalfa Be Cut?—Delaying the cutting of alfalfa until it is nearly in full bloom has been found a better practice than mowing it soon after blooming starts. Trials made by the United States Department of Agriculture and State Experiment stations indicate that the yields are larger over a period of years, and that the life of the stand is prolonged by delaying harvesting until the plants are nearly in full bloom.

Hay made when the plants are nearly in full bloom possibly is not quite so palatable, but this is offset by the gain in quantity of hay. The fields that were cut prior to or at the beginning of blooming showed a tendency to die out sooner, investigators say.

Ben Gonnadooit Says

When I was a kid I heard a great doctor give a lecter, an' he said nothin' was so likely t' induce long life as plenty o' sleep.

I tuk this lesson t' heart, an' I bin gettin' all th' sleep I could ever sence. In fac' ef sleep will add years to a man's life, I reckon I'll reach th' ripe old age o' 100.

That bein' th' case, I will have a lot more time fer useful endeavor 'n th' average man, an' consequently I figger there ain't no need of exertin' myself quite so much now.

The whitch indicates th' advantage o' foresight. In fac', by lookin' ahead 60 or 70 years, I kin see where there won't be no need o' work at all. Ever'thin' 'll be done by machinery. So ef I kin stall along fer th' next half century, an' sleep at least 14 hours outa th' 24, I figger I'll be a lot better off 'n these fellers that's akillin' 'emselves by hard work now!

When science makes work on-necessary, I, fer one, am gonna be in good shape t' enjoy my new-found leisure.—BEN GONNADOOIT.

Has Science Conquered Jack Frost?

Determined Inventors Develop Many Schemes to Foil Arch-enemy of Citrus Growers.

PERIODICALLY, Jack Frost has swooped down upon Sunny California and, blowing his icy breath across the fruit districts, left blackened leaves and flattened purses in his wake.

His 1913 visit was disastrous, but the 1922 visitation was even more costly. Smudging has been regarded as a necessary evil and as the only satisfactory ammunition for the forces of the defense.

That inventive genius is working night and day, however, to provide more efficient methods of frost fighting, is revealed by Mr. Insley in this important article, which explains for the first time a number of new and unique methods never before described in print.—The Editor.

By Edward Insley

SECRETARY OF THE COVINA FROSTLESS CONVENTION

WRITTEN ESPECIALLY FOR ORCHARD AND FARM

FOLLOWING the now historic Frostless Convention at Covina, April 29, which attracted thousands of citrus growers from different parts of the State, the Frost Prevention committee of the Covina Chamber of Commerce, which sponsored that unique and highly successful affair, formulated a report of progress of which the following is the opening paragraph:

Edward Insley

"Your committee decided in the early part of their work that if there was anything else, other than smudge pots which growers could use with satisfaction, we would never recommend that our beautiful valley be polluted with the smoke from these so-called orchard heaters."

From the beginning of orchard heating, Covina has been opposed to it. Favored by nearly frostless conditions, our great citrus district was still firm in its opposition to the pots after the calamity of 1913. The freeze of last January, however, nine years later, woke us up. A loss of more than three millions of dollars in one season gave us a hard jolt. Most of our growers reluctantly came to the conclusion that they would smudge hereafter.

The Fruit Growers' Supply Company, confident that there would be an immense demand this summer, contracted with the American Can Company for 100,000 pots, on the eve of the Frostless Convention, thereby expressing an opinion, perhaps, of the latter.

OBJECTIONS TO SMUDGING

Smudging, when done in the right way, does save the citrus crops from frost—no doubt about that! But please note the qualification, "in the right way." It is costly, heart breaking work, however, not to mention the other notorious objections. Men who smudged successfully last winter have been among the first to inquire eagerly into the possibilities of finding an efficient substitute.

The California Fruit Growers' Exchange, and its Supply Company, seem to have ignored the possibilities of finding something better. The inventor of one device for which success has been claimed, and strong proof presented of success last winter, tells me that his requests for an investigation at the hands of association officials were entirely ignored.

HOPE TO ABOLISH SMUDGE

It was left to the Covina committee to discover the optimistic inventors who were working on this problem, give them the publicity they needed, and encourage others to enter the field. Our hopes have been justified far beyond expectations, and our resolution to keep the pots out of Covina, has been vastly strengthened.

If we succeed, as we expect to do, in abolishing the smudge pot, other districts will lose no time in following our example. Put that in your smudge pot and smoke it, Mr. American Can Company!

No comprehensive review of these proposed substitutes has been printed, and in presenting the following list of some which have come to the attention of our committee no claim is made that it is complete. In fact I shall omit for lack of space several suggestions which have seemed either vague or fantastic.

Most of the apparently practical plans easily divide into three classes, which we have named for convenience: (1) Windjammers, (2) Blowers, (3) Underground heating systems.

In the first category belongs the Cobb tower, to which our committee has given considerable attention for the simple reason that it has demonstrated what it can do, wherein it has a great advantage over the others.

Mr. Cobb has claimed three years' actual orchard experimentation with a full sized machine on the 12-acre ranch of Warren Towt at Lindsay, Calif. C. E. Crawford, manager of the Covina Fruit Growers' Association, received from the Mutual Orange Growers, at Lindsay, a letter confirming the statement that 80 per cent of the fruit on the Towt orchard had been saved by the Cobb machine this last winter, while that in neighboring orchards froze.

It is asserted that with the thermometer at 21 degrees an airplane propeller, placed on a tower vertically, at a height of 34 feet and moving on a revolving platform, saved this 80 per cent of the fruit merely by keeping the air in motion. No artificial heat was used, but the Cobb tower has now been equipped with accessory heating. Another Cobb tower has been erected at Riverside, and it is said that several more have been sold.

The committee is convinced of the truth of the Cobb claims, but does not undertake to say that something better or something cheaper cannot be found. The cost of the Cobb installment is greater than that of cheap smudge pots, which rapidly deteriorate, but the plant will last many years and is economical to operate.

The Whitlock experiment tower at Ontario differs from Cobb's in that the airplane propeller is mounted horizontally and draws down the air. Cobb claims basic patents on his revolving platform with the horizontal method of moving the air.

THE BLOWER DEVICES

W. L. Ross of Porterville claims a basic patent in his "blower," which draws the warmer air down from above—when it is warmer above—through a stack, and shoots it out under the trees. Cobb avoids this method in two ways; first, with his tower which takes the air laterally, and second, with another machine, a blower, which develops artificial heat at the base, and blows it out through the upper end of a curved stack, over the tops of the trees.

John Algero of Alhambra has a variant of the blower in his plan of mounting it on a truck, to move along the ends of the rows.

D. Mackenzie of Pomona also has a blower machine with which he is experimenting. It is similar in some respects to the Cobb blower.

UNDERGROUND HEATING

Several suggestions have been made for the utilization of the cement irrigation pipes, as carriers of hot air produced at a central plant. C. A. Fu[illegible] of Arcadia told the Frostless Convention about his experimental installation of underground pipes—a ten-inch main, reduced by 4 and 2-inch laterals with warm air conducted to the base of each tree. He proposes to place a regulating thermostat on the end of each pipe. His estimate of cost is $400 an acre.

C. E. Emery of South Pasadena presents a compressed air project.

Z. T. Bell, of San Bernardino, who is understood to have the financial backing of a Pomona Frostless committee, announces that he has completed a ten-acre installation of an underground cement pipe heating system, controlled by a central plant, at a cost of $[illegible] an acre. The pipes can be used for irrigation in summer. It will be ready soon for demonstration.

Thaddeus Lowe, son of the famous Professor Lowe, told the convention that he had devised a similar system.

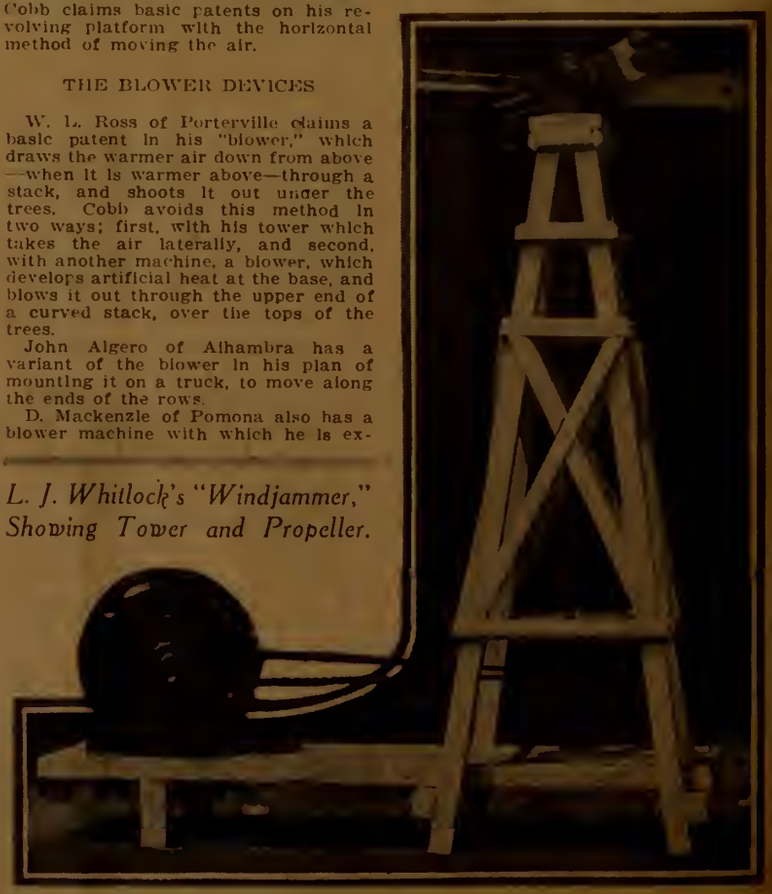
W. L. Harris of the Acetylene Generator Manufacturing Co., proposes to install an experimental plant to prove that he can produce the heat required with acetylene, and deliver it in the center of each four trees, at a reasonable cost. Our committee is much interested in Mr. Harris' idea. He predicts a very heavy drop in the cost of acetylene shortly, owing to the expiration of patents.

WILL DYNAMITE DO IT?

Among many letters received since the beginning of this agitation, was one from Robert Weiss of Upland, recommending the use of dynamite. The explosion of a quarter pound stick in the center of a ten acre orchard, every two or three minutes during the danger period, will move the air for a distance of 600 to 900 feet, he asserts. It shoots away the frost—keeps it from "coming down" and "settling." Mr. Weiss further alleges that this plan is an old one in the grape districts of France, where the forts shoot blank

(Continued on Page 13)

Left—Model of Famous "Cobb" Machine, Installed at Towt Ranch, Lindsey, Cal. Right—Edward S. Cobb and "Blower" Model.



L. J. Whitlock's "Windjammer," Showing Tower and Propeller.

EDITORIAL DEPARTMENT

Timely Topics among Farm Folk

James C. Knollin, Managing Editor

This Is the Fire Season

OUR forest lands are a priceless possession, yet thousands of acres annually are denuded by terrible conflagrations. Every subscriber is urged to co-operate with the U. S. Forest Service in preventing and controlling forest fires. Smokers should take care never to drop a burning match or lighted "butt." Campers should extinguish every blaze before leaving it.

Grain and hay fires, too, usually are traceable to carelessness. Let us all deputize ourselves fire fighters and bear in mind the possible results of our own negligence!

What About Mexican Vegetables?

THAT early vegetables from Western Mexico are being shipped into California and Eastern markets in constantly increasing quantities is disclosed by daily market reports from Los Angeles, San Francisco and other large distributing centers.

Lands on the west coast of Mexico, practically frostless and valued at from 50 cents to $10 an acre, with water available for irrigation, are being utilized by native and American vegetable growers, according to those who have investigated the situation.

Using cheap Japanese, Chinese and Mexican labor, these growers, now being served by the Southern Pacific Railroad and by improved water transportation, are able to reach local markets and to sell at very low prices; in fact, extinction of the vegetable industry as now carried on by white farmers and truck gardeners in California is threatened, according to F. H. Tolle of the South Coast Land Company, who has made a special study of these conditions.

In a plea for tariff protection, growers interested in the production of vegetables in California have wired U. S. Senators Hiram W. Johnson and Samuel M. Shortridge, Congressman Oshorne and others, urging inclusion in the tariff bill of a schedule that will save this important industry. That it IS important is shown by official statistics, nearly 60,000 carloads of vegetables having been shipped out of California during each of the past two years. The value per car averages very high, in many cases representing a net return to the grower of $1500 to $2000, shippers assert. Because of the heavy shipments East, the vegetable industry brings enormous sums of new money into California.

Those interested have demanded a tariff on green peas of not less than 6 cents per pound and on egg plant, string beans, Italian squash, summer squash and cucumbers of a similar amount. On cantaloupe, not less than $1 per crate is asked.

It is pointed out that the average cost of production of peas in California is from 4¾ to 6¾ cents per pound, exclusive of transportation and commission charges, which amount to from 2 to 6 cents per pound.

The vegetable lands involved are situated principally in the province of Sinaloa and in Nayarit territory (formerly Tepic). The lands comprise an area about 80 miles wide and 500 miles in length.

In addition to the Southern Pacific, the line of the Kansas City, Mexico and Orient enters this rich district, and through the seaports of Guaymos, Topolobampo, Mazatlan and San Blas, additional outlets are afforded.

Unless protection is provided in the new tariff bill, serious effects will be noted this year, possibly disastrous effects next year, and probably total extinction of our vegetable industry within three years, according to local growers. Farmers and others interested are urged to get in touch with their Congressmen and Representatives and to bring as much pressure as possible to bear from eastern sources in order to secure quick action in Washington.

The co-operation of Florida officials and growers already has been secured, according to Mr. Tolle. W. A. [illegible], Commissioner of Agriculture of the State of Florida has agreed to lend all possible assistance.

Delegates to represent of California producers, Senator [illegible] recently said: "I am asking of the Finance Committee [illegible] amendments, six cents on peas, tomatoes, cucumbers, peppers, squash and spinach, [illegible] in their natural state, 20 per [illegible] I am asking as well, $1 a crate on [illegible]

[illegible] has a realization of the justice of the demand for protection and assured the growers he would do all in his power to secure the insertion of the desired clause.

A New Kind of Tractor "Kick"

SO SUCCESSFUL have been California designers and manufacturers of tractors and farm machinery that many Eastern makers have created "California models," or have added special equipment for California conditions.

A noted local inventor, J. M. Kroyer, creator of a number of successful tractors and tractor features, recently had a novel experience, indicating the progress that has been made during recent years in the development of the "iron horse."

Stopping at a ranch where one of his "brain children" was at work, Mr. Kroyer inquired concerning its performance.

"We have a complaint to register," said the foreman. "The driver kicks because the machine keeps going so steadily he has no chance to rest. He has been accustomed to stopping every little while for oiling, adjustment and minor repairs; now he says he hasn't even a chance to get down from the driver's seat and stretch!"

This is a refreshing variation of the old type of tractor "kick." And no doubt, with the increasing refinement and constant improvement of our standard tractors, serious trouble in the field soon will be as unusual as trouble with the modern motor car.

Interesting, too, are the stories of wonderful feats with "track-layers" of various makes and sizes, the possibilities of which were emphasized by the accomplishments of the "tanks" during the war.

In Alaska big tractors worked through the coldest months, hauling for miles over the snow and ice, supplies for the new Government railroad. In the swampy bottomlands of the South they have performed successfully where mules feared to tread. Such feats, however, are merely unusual demonstrations of very usual dependability.

No less remarkable are the stories told of some of the "wheelers," which, working year after year with threshing outfits or at general farm or orchard tasks, have piled up almost unbelievable records of faithful belt and field performance.

The prospective tractor investor has an interesting and difficult task in choosing the type and model for his purpose. In justice to himself, he should make a careful survey of the field, and this survey in itself will prove to be a liberal education.

The big Eastern manufacturers, of course, are developing better, safer, surer tractors every year. But, as in the past, they are securing many of their best ideas and some of their stiffest competition from California designers and makers.

This is as it should be! The greater the competition, the more the farmers benefit. Let the race be fast and furious!

Meanwhile, one thing is certain—the farm tractor is no longer an experiment, a toy or a costly luxury. It is a proven unit, a safe and profitable investment, a NECESSITY under most farming conditions, whether used alone or in conjunction with the still valuable and faithful "Dobbin."

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To Market With California Fruit

By Robert E. Jones

CONTRIBUTING EDITOR OF ORCHARD AND FARM

IT IS little wonder the early California fruit grower had difficulty in making money. One man scarcely could be expected to master both the growing of desirable fruit and its marketing. In fact, each of these branches of any industry requires special knowledge, experience and ability, and in a business so complex as fruit production, these two factors have developed minds of entirely different training and outlook.

"Bob" Jones

Citrus producers were the first to learn that the grower needs the salesman and the salesman, the grower. The natural instinct of the former is toward individualism, whereas marketing requires a broad vision, plus experience in giving the public what it wants.

Through the California Fruit Growers' Exchange, headed by an executive with just such a broad outlook, the producers of citrus fruit have solved their problems.

SPECIAL DECIDUOUS PROBLEMS

If the citrus industry has complexities, however, they are manifold in the deciduous game, for marketing of the crop is a delicate matter, indeed.

In the first place there are dozens of kinds and hundreds of varieties of deciduous fruits. With citrus, on the other hand, the marketing man has to deal with only a few standard varieties of oranges, lemons and grapefruit. Deciduous fruit, too, is a seasonal crop, which must get to the consumer quickly after being taken from the tree. Citrus, while perishable, has a much longer season. Deciduous fruits are of many colors; citrus fruits, according to the kind, are of one color.

"I'd lose my job if I tried to ship blue plums into the Southern States," the "f.o.b. man" of one of the big marketing organizations said recently.

"On the other hand, I'd lose my job if I tried to ship red plums into New England States. The Southerners like the showy red kind while the Northerners like the subdued blue. Boston, which is noted for its reserve and culture, is one of the best markets we have for blue plums."

LITTLE THINGS COUNT

Now, who ever would have thought the color of plums made any difference in marketing? Here on the Pacific Coast, we are not so much interested in color, for we have an abundance to choose from. Flavor and quality are of prime importance with the home folk, for we have had the opportunity to try them all.

Solano County's "English Hills"—an Early Deciduous Shipping District (McCurry Photo)

How the 40,000-Car Deciduous Crop of the Golden State is Handled

TO divorce production and marketing would be to wreck the most successful partnership of all times. In fact, marketing is recognized as the "better half" of agriculture. It is a far cry from the limb of a California tree to the push-cart of a New York peddler. Yet the average producer consigns his fruit with little thought of its long journey into the hands of the ultimate consumer. Of unusual value, therefore, is this "inside" story of the big Exchanges, revealing facts not generally known or understood.

Back in the early days of California's deciduous fruit industry, trees were set out with little thought of the marketing problem. In fact, it is likely the farmer expected to haul his peaches, pears, apricots, cherries and plums to the nearest town and dispose of them. But as it became apparent that California was peculiarly adapted to these fruits, plantings increased rapidly, and soon the home markets were glutted. It then became a matter of obtaining outlets in other States.

Fresh fruit shipping, at this stage of its development, was rescued from stagnation and destruction by the meat packing industry. Chicago packers of meats had invented and developed the refrigerator car to carry dressed meats. And refrigerator service was needed for fruits. That was apparent, since from nine to eleven days were required to transport fruit from the Pacific to the Atlantic seaboard and, without refrigeration, the fruit would spoil before it could reach market. Thus the refrigerator car opened the markets of the entire American continent to California perishables, originally planted purely for local consumption.

SOME EARLY DIFFICULTIES

That is one chapter in the history of the deciduous fruit industry. Even with the refrigerator car, however, early days of distant marketing were filled with grief. Many hands were in the game, with no directing head. Each individual shipper sought the best market and soon overloaded it. Gluts and red ink were frequent at this stage. Lack of distribution through a central head who might parcel out the supply according to demand, meant disaster for many growers. It was feast or famine for the markets and mostly famine for the grower.

Trouble and experience reacted in the fruit industry just as they do in all other phases of life. It forced men with kindred problems together to talk over their grievances and work out a solution. Out of chaos came order—co-operation in marketing, better service to the consumer, improved quality of pack, even distribution of the fruit supply, an expanded market, a stable business for the distributor, or "fruit company," and prosperity for the grower.

Figures on carload shipments will tell how the industry has grown—from 7136 carloads, shipped out of California in 1902, to 40,308 carloads shipped from the State in 1921.

IS OVERPRODUCTION POSSIBLE?

All along the line has been the constant fear of "over production." Yet the demand for California fruits in 1922 was greater than ever. Frantic wires for more came as the season drew to a close. But today, deciduous fruits go to every small city and hamlet of the American continent. Yesterday, the shippers, acting individually, were ruining each other in trying to cover the good markets.

Today, California stands second in rank among States of the Union in total value of farm crops. Texas, with its vast area, still is first. Who can say how humiliatingly low would be the rank of California were it not for the specialty fruit industry, with its efficient marketing methods?

So much for history. Today the marketing of California's deciduous fruit crop—that is, the fresh fruits—is centralized to a controlling degree in two large organizations.

One of these is the California Fruit Distributors, of which Wilmer Scig is the general manager. It is the organization which, in the past, has been headed by such dynamic men as Alden Anderson, Frank B. McKevitt and Charles E. Virden.

PROBLEMS OF ASSOCIATIONS

The other is the California Fruit Exchange, of which John L. Nagle is the General Manager and George H. Cutter the president. Both maintain offices in the California Fruit Building at Sacramento, where conference on marketing matters is convenient.

Both organizations have the same problem before them—to secure an equitable distribution of the California fruit crop, to supply the trade efficiently and to secure a fair price for the grower.

The plan of organization of the two deciduous distributing agencies is not entirely like that of the citrus organization. The "Distributors" is an association of fruit companies; the California Fruit Exchange is a central organization of local growers' associations.

PACKING THE FRUIT

Fruit companies and local associations handle the packing of the fruit and get it into refrigerator cars. The "f.o.b." cars go to a definite dealer or a definite market, but many of the cars sent out are "tramps." The [illegible]

Picking California Cherries for Early Shipment to Eastern Markets (McCurry Photo)

[illegible] destination and, if not sold [illegible] arrival, eventually reach the [illegible] California fruit is sold [illegible] in large cities, much of it [illegible] to the push cart trade. These [illegible] in large cities virtually fix the market for the day.

The main job of the general manager of the Distributors or Exchange during the height of the shipping is to see that these "tramp" cars are disposed of to best advantage. They must not be [illegible] into an over-stocked market, or a "break" will occur and low prices will follow. To cross the line beyond the fair supply for the demand means disaster. Therefore, the man in charge must be a keen judge of the market. He must know the portent of the code [illegible] that come to him each day, reporting prices in all of the big cities of the United States.

BILLING OF "TRAMP" CARS

When a "tramp" car starts on its way East, a card is made out for it. This card moves about from day to day as the car progresses on its way. The general manager has a big cabinet filled with these cards, and a moment's inspection will apprise him of the location of every car of fruit at that particular moment. He may get a wire order from St. Joseph for a carload of pears. That car probably already is half way to St. Joseph as a "tramp." He diverts it to St. Joseph.

"Tramps" which are not sold en route eventually reach the auction market, but many of them find definite buyers. Thus the general manager of one of these central distributing organizations may be likened to a general in the army with a constant "line" on his forces.

Many carloads of fruit now are shipped from California to definite dealers. A new tendency, too, is to

THE ASSORTED CAR SUPPLIES THE DEMAND OF THE SMALLER COMMUNITY AND CREATES A BROADER MARKET FOR CALIFORNIA FRUITS

ship more assorted cars, which means a car with a variety of fruit, such as peaches, pears, grapes and plums, or pears, grapes, peaches, etc. Such cars go to the smaller cities which are not able to absorb a solid car of one variety. The assorted car has come with the broadening of the scope of fruit marketing. Naturally the big cities were the main outlets at first; penetrating of smaller centers with California fruits was a later development.

COMPETITION A FACTOR

While California is supreme in deciduous fruits as well as citrus, it has many competition in deciduous. This is quite an important factor with the marketing man. Early in the season he must have information as to the [illegible] peach crops, the Oregon cherries and the pears of Colorado, Oregon, Washington, New York and other states.

[illegible]ing of cherries marks the opening of the deciduous season in California. "Ripening" may be a misnomer in this case, for more often than not the first box, which usually sells for around $10 a pound, has some [illegible] little palatability. But it is [illegible] by some hotel keeper of [illegible] for advertising purposes. [illegible] Vacaville district of Solano County, the Sacramento River district and Placer County vie for the honor of [illegible] the first box.

[illegible] Oregon competition in cherries, the northern fruit is [illegible] interfere with the [illegible] Santa Clara Valley [illegible] late [illegible] for California [illegible] usually feels some of [illegible]

(Page 2[illegible])

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Maintaining Citrus Production

By Vincent F. Blanchard

NO ONE knows better than the citrus grower himself that it costs a great deal to bring a grove to bearing. And in figuring the amount involved, the grower must face also, the fact that in order to maintain his grove in a high state of productivity and thus pay satisfactory dividends on the investment, it is necessary to care for each individual tree.

It is too often the case, however, that citrus growers think of their property in terms of grove units, or acre units, rather than of individual trees. It is the individual tree that produces the fruit, and the quantity of fruit produced is determined largely by the number of trees which function as producers. If two or three or more trees per acre are injured by disease or pest, then profits are cut materially. Many times the individual tree does not function as a producer because it is off-type, having the inherent characteristic of non-production. If the grower pays more attention to individual tree care, chances for earning satisfactory interest on the investment are greater.

Individual Tree Records

INDIVIDUAL tree care cannot be carried on intelligently without the maintenance of some sort of tree record. Many systems of keeping records are being used with success, and it should be an easy matter for a grower to plan one to suit his requirements. Some have used "plots" of the grove, while others have made a tree history.

In 1916 I wrote an individual tree history for a citrus ranch containing about 350 acres of trees. This was compiled by charting each tract separately, and using one sheet of lined paper for each row, with suitable headings at the top.

The first heading was "Tree Number," which had listed under it the row number and the tree number, for example, "2—1." The "2" represented the number of the row and the "1" the number of the first tree in that row. If there happened to be more trees in the row than lines on the page, another page was used to complete the row.

RECORD OF AGE IMPORTANT

The second column heading was "Age." It is essential that the age of each tree be known. Sometimes it happens, however, that certain trees do not grow as rapidly as others; in fact, are dwarfed to the extent that they are undersized. If one does not have the age record of that tree, it is easy to confuse it with "resets." If its age were known, on the other hand, the grower would have a better idea as to how to treat it. A knowledge of the differences in ages of trees in a grove will help in analyzing production records.

The records we made following the 1913 freeze, comparing the treatment of frozen trees with those planted in 1914 and 1915 ,gave some very interesting and valuable data. If we had not had a record of the ages, these data would have been incomplete and inaccurate.

Another heading was "Remarks." In this column we indicated what treatment had been given, such as certain management following the 1917 freeze, disease, frost cracks, or other troubles. Another column was captioned as "Type." That perhaps is unnecessary for this information can be put under "Remarks." By "Type," we mean the nature of the tree, whether normal shape tree or "off-variety."

GROWER SHOULD KNOW PRODUCTION

Perhaps another column could be used to great advantage: "Production." Many growers are keeping some sort of production records one of the most common of which is an estimation of the percentage of crop on the trees by "eye judgment." Such a record, although not accurate, will give a good idea of which trees are producers and which non-producers. Such a column should be arranged to show production for at least a four-year period .

Individual Tree Inspection

ONE of the best means of insuring a grove against loss or injury of trees by disease or pest is to make a semi-annual or annual inspection of each tree. It is too often the case that "sick" trees are not found until the effect shows on the foliage, with the leaves turning yellow. But in order to maintain the tree in a producing condition the trouble should be located before this time. It takes a long while to bring yellow leaves back to dark green color.

In inspecting a tree, a thorough examination of the trunk, beginning below the bud union and extending up into the main limbs, should be undertaken. It is necessary sometimes to pull the soil away from the trunk, especially around the bud union. If gophers are at all active, evidence of their work should be sought. If a citrus tree is found before the leaves have turned yellow, after girdling, it can be maintained in a high state of productivity by "in-arching" sour stock seedlings above the girdle; it is essential, therefore, that gophered trees be located before the injury becomes apparent to any great extent in the tops. (This process is explained elsewhere in this article.)

SHOULD KNOW WHAT TO OBSERVE

It is of course important in making a tree inspection to know what to observe. A grower should acquaint himself with all of the various troubles to which a citrus tree is subject; otherwise a tree inspection might result in overlooking serious diseases and other troubles. They are described in various publications of the Citrus Experiment Station and agricultural journals. Demonstrations are being conducted under the control of these various diseases from time to time by the Agricultural Extension Service and such demonstrations have proved of great benefit in acquainting growers with diseases and their treatments.

Trunk and Root Diseases

CITRUS trees are affected by several diseases which interfere materially with production and often result in their death. Among these are Oak Root Fungus, Foot Rot, Scaly Bark of oranges and grape fruit, Shell Bark of lemons, Brown Rot Gum disease, Botrytis Gum Disease and Heart Rot. All of those are important and should be kept in mind in making a tree inspection.

It has been found that the best time to treat most of the diseases is during the spring and summer months. It would be well, therefore, to make a tree inspection now in order to get treatment under way while conditions are best.

Stunted Trees

ALMOST every orchard has a few stunted trees. Since these are below size, even though many are healthy in color they do not bear satisfactory crops. The grower should determine just what is the cause of the dwarfed condition.

A few suggestions can be offered to assist in determining procedure. In many such cases, examination of the subsoil beneath or around the trees will show that it is rocky, or gravelly, or sandy. In that case, treatment will depend largely upon just how unfavorable are the soil conditions. Sometimes such trees can be helped by digging trenches around them, removing the rocks and gravel, and filling with manure and good soil. But while this will help, it will not make a first-class tree. Sometimes the soil is so rocky that it is better to take up the tree and make a large hole, fill with good soil and manure, and replant. It is impractical

[illegible] to treat many trees [illegible], but for an occasional tree [illegible] good practice.

[illegible] trees sometimes are observed [illegible] show a great difference in sizes [illegible] the stock and bud union. In [illegible], the tree should be removed. In other cases there are trees which [illegible] have no particular cause for [illegible] dwarfed condition, except that it [illegible] inherent characteristic. Such individuals should be taken up and replaced with good trees.

[illegible] budded on *trifoliata* stock usually are dwarfed. In general such trees do not produce profitable crops and should be removed. In-arching has been suggested as a possible means of improving such trees, but so far as I know has never been tried out.

Saving Girdled Trees

ONE of the most persistent pests of the citrus grove is the pocket gopher. Many trees have been injured or killed by these animals, and their presence has resulted in the loss of millions of dollars. Saving a tree which has been girdled by gophers or by some other cause, such as gum disease, always has been an important problem of citrus growers.

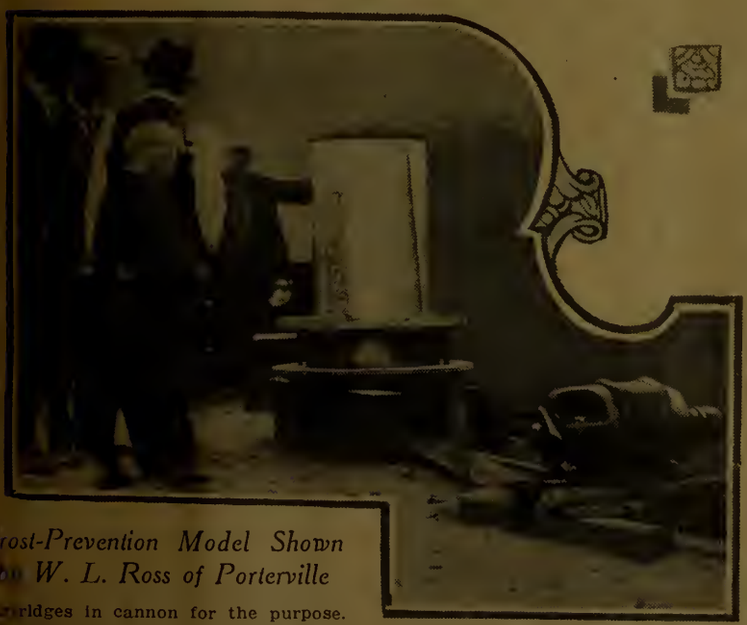
A means of saving such trees has been used with success and is simple enough to be practical. The system, in brief, is as follows:

Dig from three to five holes, depending upon size of the tree, around the trunk, deep enough for planting a nursery tree. Scrape the outside tissues of the bark to clean it, and where the bark is too thick thin it down just above the girdle. Set the seedlings and measure when the roots are about the right depth, cutting an inverted "T" in the tree at the proper height. Now make about a 45 degree smooth cut through the trunk of the seedling and insert into the inverted "T."

Bore a small hole with a drill into the end, into which a very small nail should be driven to hold the cut end tightly against the cambium. Cover the bare roots with soil. Paint over the graft with a grafting wax. Make a patch from waxed budding cloth about two by three inches in size, with a slit lengthwise to about the middle. Press this tightly over the graft with the loose ends beneath the sour stock trunk. Irrigate the soil to settle around the roots. Pile damp soil above the top grafts and leave for period of six weeks to assist in healing.

Foiling Jack Frost

(Continued From Page 8)



Frost-Prevention Model Shown by W. L. Ross of Porterville

[illegible] bridges in cannon for the purpose. [illegible] expense would be very moderate.

[illegible] along comes Bingham T. Wilson, of Covina, with an elaboration of the [illegible] idea, in what he calls "frost [illegible]es," thrown 100 feet in the air [illegible] "bomb traps." If dynamite will [illegible] trick, Messrs. Weiss and Wilson [illegible]ly have suggested the cheapest [illegible] mention noisiest) method of [illegible]tection.

This compilation would be incomplete without mention of the Waterman machine, the model of which has met with much favor in our district. It is backed by Covina capital. Apparently it will accomplish all that is claimed for the "windjammers" or the "blowers," but do it differently. However, the machine is not on the market, and the first experimental machine is still to be erected. Work will begin on it shortly.

Peaches on Almonds

An interesting experiment has been carried out by J. A. Harris of Sutter County. He has placed on exhibition at the county seat Phillips cling grown on almond trees, which proves the practicability of [illegible] over almonds for peach pro[illegible]. One fourteen months old graft [illegible] 10 peaches of fine quality. Mr Harris used the grafts [illegible] old almond trees.—Oscar [illegible]

[illegible] Necessity"—I have been a [illegible] to your valuable paper for [illegible] years and consider it a [illegible]ity.—Harry Campbell, [illegible]

[illegible] Do Without It"—I enjoy [illegible] ORCHARD and FARM, and [illegible] it.—J. S. May, [illegible]

[illegible] your paper [illegible] It just [illegible] a year's sub[illegible]w, Arago, Ore.

A Correction

DUE to a typographical error in one of Vincent F. Blanchard's articles in the May issue, an unintentional injustice was done both Mr. Blanchard, and Mr. Borden of the Alhambra Spray Company, who formerly was in charge of the Red Spider investigations for the U. S. Department of Agriculture.

Referring to the discontinuance of the Red Spider investigation station, Mr. Blanchard was made to say "It was indeed fortunate this work was discontinued." This should have read, "It was indeed **unfortunate** this work was discontinued."

The station was closed as the result of Mr. Borden's resignation to take up his present duties with the spray manufacturers.

The latter now point to recent experiments with oil emulsions of a special formula, as evidence that the red spider is practically, if not entirely, conquered.

Growers are watching with interest the work of Mr. Borden and the Alhambra concern, as well as that of Prof. Quayle at the Riverside Experiment Station.

Every Woman Loves to Paint

When She Knows How

—Let Us Tell You

PAINTING is really fascinating work. Once you are started you'll probably not want to stop until you have refinished many things you did not intend to do at first.

Of course, there are some simple directions that must be followed if the work is to be successful, and we have a special "Home Service Paint Department" which was organized just to tell you how to paint.

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Our experts will tell you what materials to use, how to do the work step by step, what brushes you'll need, and everything about it.

For 73 years we have been making paints, varnishes, enamels, wall finishes and stains for women to use. They are the finest materials of their kind that we know.

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Free Advice

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Decoret Varnish Stains for refinishing furniture and interior woodwork. They stain and varnish in one operation. Match the color of any natural wood. 8 colors.

Silkenwhite Enamel produces a rich, beautiful finish on woodwork and furniture. Flows out smoothly and does not show brush marks. Produces a mirror-smooth surface. Stays white and wears long. Gloss white, semi-gloss white and 8 colors.

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"Bob" Jones' Corner

Little Stories of Farming

By Robert E. Jones
CONTRIBUTING EDITOR OF ORCHARD AND FARM

Delhi Colony Has Paper—A weekly newspaper printed on the "Multigraph" is issued by General Superintendent Packard of the State Land Colony at Delhi, Merced County, to keep residents informed on various matters. This little paper not only publishes items of personal and business interest, but also carries valuable information on technical subjects. Max Cook, the architect and engineer who designs homes and other buildings for settlers, is the artist. He has done several cartoons for the little sheet which are very effective. The latest issue of "Delhi News" contains a bit of poetry, a news item telling of the meeting of the Delhi Co-operative Association, a hint on planting sweet potatoes and corn, some suggestions on destroying cutworms, an estray notice regarding a Jersey cow, an "ad" of hay for sale and the notice of the death of a settler.

So Many for One—J. Nutter Cox of Berkeley, a charming gentleman who was a British engineer on the Junjab irrigation project in India, tells me that over there production is not measured by the acre, but by the amount of seed used. For instance, the Indian farmer, if he were speaking of the yield of beans obtained from the planting of one sack of beans, would say "I got twenty for one." The Federal Department of Agriculture sometimes mentions yields in this way, but purely as a novelty. A Washington statistician recently figured that tomatoes yield 200 to 300 fold. He says:

"One ton of ripe tomatoes yields only 8 or 10 pounds of seed. This quantity of seed should produce 300,000 to 400,000 plants, which are sufficient to set 50 to 70 acres for the production of commercial tomatoes. Based on the average yield per acre of 4.3 tons during the past four years, the total production from this area would be 215 to 300 tons, indicating that the production of tomatoes is 200 to 300 fold."

Decidedly Overtime—"Overtime" is the name given by a St. Louis hen owned by Mrs. August Henke, which brought forth seventeen chicks from fifteen eggs. Can the record be beaten?

An Enviable Showing—Figures recently compiled show that for the past six years, while competing only four times, the California College of Agriculture has won more prize money at the Chicago International Livestock Show than any other institution in the United States. California is first with $1600, Iowa second with $1125 and Purdue third with $1010. This is not surprising information, for we have mentioned in these columns a number of times the fact that steers and sheep from the Davis institution have won so famously at Chicago. Under the direction of Professor Gordon H. True, head of the animal Husbandry Division, the exhibits from California at Chicago always have outshone anything from elsewhere in the country. Notable among California winners have been California Favorite, California Model, California Jock and Lula Mayflower, the grand champion beef animal for 1921.

As to Cargo Values—Figures compiled by George W. Peltier, Sacramento banker and president of the Sutter Basin Company, show that the traffic of the Sacramento, San Joaquin and Mokelumne Rivers totals $108,000,000 a year. It is stated this is the most valuable cargo per ton of that carried on any river in the United States. Peltier points out that much of the freight moved on the stream consists of such high class farm products as asparagus, spinach, sugar beets, deciduous fruits and winter vegetables. Some time ago figures of the Federal Department of Agriculture were given out showing that the value of farm products from the Sacramento-San Joaquin district was greater per square mile of area than that produced from any other area elsewhere in the United States.

From Engineer to Peach Grower—The lure of the land is as irresistible as any other basic force in one's life. Curtis Lindley of Empire, Stanislaus County, was a highly successful engineer, but has given up his profession to raise peaches in the Modesto district. On his little farm of forty acres, where he gets close to the dirt and works with his hands, he says he is happier than he ever has been in his life. During the war Lindley was engineer in the Lilienthal plant at Oakland, which was turning out airplane motors, but as soon as that job was done he turned to the soil. Like all good home boosters he asserts the Empire district is the best peach section in the State and he is quite scientific in his arguments. It is the home town pride that keeps things going forward.

Armenian Ascendancy—The Armenian Students' Society of Fresno won the grand award in the recent Raisin Day festival parade, which was a gigantic affair, a tribute to country wide co-operation. Armenian farmers of the Fresno district are known as the most successful, and they are invading business, too, with remarkably rapid strides. It was rather a surprise, though, to see the Armenian colony carry off the chief award for artistic floats, although the floats certainly deserved every honor that was offered. The Raisin Festival parade was one of the most complete ever seen by the writer. Every little community of the raisin district of San Joaquin Valley participated, and the co-operation was truly an inspiration. Those who had charge of the affair well may be proud of the result. Although there were speedway races at Fresno the same day, the parade was by far the most striking event of the festival.

Requa on Farm Finance—Much interest has been aroused through the publication recently of a pamphlet by M. L. Requa, oil administrator during the war and owner of Anchorage Farm at Orland, on "Financing Farm Land Settlement." Requa is a retired banker and is now devoting much of his attention to land settlement problems. He is in close contact with the farmer's problems. He requests that "constructive suggestions" on the matter of financing farm land settlement be offered him. The objective he has in view is some sort of co-operation between State and private enterprise. The State Bankers' Association is preparing to take up the matter and Requa will be one of the principal speakers. Fred W. Kiesel of Sacramento also is much interested.

Deciduous Very Late—This is one of the latest seasons in the history of the deciduous fruit industry. The weather of interior California has remained cool so long in spring that all varieties have been delayed in ripening. With the coming of May the first cherries were shipped. Ordinarily they go out about the middle of April. Although deciduous trees generally are strong and healthy with an abundance of moisture in the soil to bring them out and develop big crops, some damage to fruit on trees resulted from the rains. The big Fruit Building at Sacramento, from which the marketing of the deciduous industry is directed, is just beginning to be a beehive of activity. George Cutter, president of the California Fruit Growers' Exchange, remarked the other day that he had not taken off his coat yet but expected to do so shortly.

Worried Over Tenantry Growth—All over the Nation the best minds in agriculture are seeking a solution of the problem of increased farm tenantry. In one of the last addresses he made before his death Theodore Roosevelt laid great stress upon the necessity of finding some

[illegible] this problem. In California many big men are working upon it. The subject is a fertile one for magazine editors. Yet the Federal Department of Agriculture figures show it is steadily on the increase. It is pointed out that the increase in acres rented since 1910 has been 20 per cent, as compared with an increase of 14 per cent for the preceding decade and that the increase in value of land rented has been 111 per cent, as against 135. The figures show also that tenants are handling more land than formerly. Life is filled with problems. The tenant farming problem seems to be a perennial one.

Hoping for S. F. Show—J. A. Bunting, the Hereford breeder of Mission San Jose, Alameda County, says every effort will be made to hold a livestock show in San Francisco again this year. The breeders, however, are quite disappointed over their failure to get enthusiastic support from San Francisco. They say they are willing to bear the brunt of the work and finances for another year if they can but be assured that the big city by the bay will wake up and carry it thereafter. There has been some intimation that Oakland will enter the lists for this show as a rival of San Francisco.

Fifty Thousand Cars for Fruit—Figures recently compiled by fruit interests in Sacramento indicate that 50,000 refrigerator cars will be required this year to handle the deciduous fruit crop. More than half of these, of course, will be loaded with grapes.

Interested in "Berks"—Mrs. E. R. Fritsche of Douglasville, Pa., who has a fine Berkshire breeding farm in the Quaker State, recently visited California. She spent some time at Grape Wild Farm at Escalon, owned by A. B. Humphrey, one of the most famous Berkshire breeders in the world. It was Mrs. Fritsche who purchased from Humphrey the world famous boar, Grand Leader II, grand champion at the Pacific International Livestock Show. This boar went to the Eastern farm and his blood has played a big part in upbuilding the breed cast of the Rocky Mountains.

A New Alfalfa Association—Some of the larger alfalfa producers in California have got together in an association with the view of co-operating in the marketing of their crops. W. F. Cordes of San Francisco, who has a big tract of alfalfa near Stockton, is one of the leaders in the association. A. B. Humphrey of Escalon also is a member, and the Sutter Basin Company of Sacramento, with a new 1000-acre tract of alfalfa, is still another factor in the organization.

Make Ideas Pay

WITH hogs selling at 11½ or 12 cents a pound, and with the prices of feeds not too high, an increased interest is being manifested in the production of pork in California. A decreased pig crop is reported in the East, and with a large acreage of corn, it is highly probable that fewer hogs will be shipped into California during the coming year than during the past [illegible] months. If the demand for pork products continues, and if the supply remains constant it is anticipated that market prices will continue high.

In line with increased activity in the industry, the president of the California Swine Breeders' Association is announcing a prize for the best slogan for this organization. The Association is composed of men who produce pork in California. There are no special restrictions, except that the slogan should be sent with name and address to the Secretary of the California Swine Breeders' Association, [illegible] California.

Orchard and Farm—"We have [illegible] ORCHARD and [illegible] and find it most [illegible]tive and very much [illegible] the home." Mr. [illegible], Cal.

[illegible] have a 130-acre [illegible] want to [illegible] ORCHARD and FARM [illegible], Cal.

An Electric Range

Gives Instant Control of Heat in Summer

HOUSEWIVES in the farming districts served by the P G and E can have kitchens that are as COMFORTABLE IN SUMMER as the kitchens of their city sisters.

ELECTRIC POWER, carried in the lines that spread web-like over the state, makes more pleasant kitchens possible through the use of ELECTRIC RANGES. No fuel to carry, no fires to build and poke, no dirt, and *instant* regulation of the amount of heat are some of the advantages of using electricity for cooking.

Think how pleasant it is on summer days to turn a switch and have the *"fire" out instantly*. Another turn of the switch and the heat is *instantly* on.

The cost of electric power used by electric ranges in P G and E territory averages only $60 per year per stove. Look over the nearest dealer's supply of electric ranges, and ask the P G and E man for more information.

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Short coupled, compact, with no part extending wider than the 30 inches of furrows the plow cuts, and with no part higher than the land wheels, allows it to work close to trees, shrubs or fences. We will guarantee this plow. It gives universal satisfaction. Write for catalog. See this implement in our salesroom.

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Write for beautifully illustrated folder.

Pacific Electric Railway

O. A. SMITH, General Passenger Agent
LOS ANGELES

A PAGE OF AVOCADO HISTORY

Prepared for ORCHARD and FARM by Victor W. Killick

A FLORIDA TYPE (at right) and a California Harmon, planted on the same day. The Florida tree does not appear to like its change of climate—or does everything grow faster in California?

SO VALUABLE was the famous Whittier Ganter tree [illegible] Rideout, shown at the right, planted [illegible] as a [illegible]

The World Your Front Yard

By Frank George
UNITED STATES DEPARTMENT OF AGRICULTURE
WRITTEN ESPECIALLY FOR ORCHARD AND FARM

ANOTHER infant prodigy! Conceived in the need of America's food producers for up-to-the-[illegible]te market information, born in [illegible]n environment of service, nurtured [illegible]th scientific care, the agricultural [illegible]ress broadcast service of the [illegible]ted States Department of Agricul[illegible]re has become a sturdy youngster. And this within only a year's time! [illegible]y there are few places in the [illegible]ted States where national and lo[illegible] crop, weather and market reports [illegible]not be received by wireless a few [illegible]rs after the markets close.

[illegible]y the use of the wireless, news of [illegible] markets of the country is brought [illegible]o the farm door. No longer is it [illegible]cessary for the farmer to wait days [illegible] learn the ruling market prices; no [illegible]er does he need to work in the [illegible]rk, uninformed as to the prices his [illegible]ucts will bring upon the market. [illegible] wireless key pressed, or a statement [illegible] into a transmitting instrument, [illegible]nd the message of the markets is [illegible]shed to thousands of farmers wher[illegible]er they are located. Thus is the [illegible]ower of crops placed on an equal [illegible]ooting with the dealer who buys them.

MARKET REPORTS DAILY

Reports on the national agricultural [illegible]rkets are dispatched daily by the [illegible]partment from wireless stations of [illegible]e Post Office Department at Cincin[illegible]ti, Omaha, Washington, North [illegible] Nebr.; Rock Springs, Wyo.; [illegible] Nev., and Reno, Nev. Any one [illegible] wireless receiving equipment [illegible] miles of each of these sta[illegible] receive the messages.

[illegible]re more than 1100 amateur [illegible]rators in California. The [illegible]tate is within the wireless ra[illegible] the Elko and Reno stations, [illegible] the Department of Agri[illegible] dispatches daily reports of [illegible] the 10 largest mar[illegible] United States, and reports [illegible]o livestock market, and [illegible] the market news [illegible]ary arrangements [illegible] operator.

[illegible] livestock receipts are [illegible] 10 a. m., and the [illegible]rt at 12 o'clock [illegible]go livestock re[illegible] dispatched at 4 [illegible] livestock receipts [illegible] 9 a. m. and the [illegible] 1 p. m

There are a number of commercial wireless telegraph and telephone sending stations in California and the development of a local broadcast market service in California is said to be well under way. From San Francisco and Los Angeles reports on agricultural market conditions at San Francisco, Los Angeles, San Diego, Portland and other Pacific Coast market centers to which California farm products are shipped may soon be broadcast daily received by amateur operators, and disseminated by messenger, telephone, and other means of rapid communication.

In Eastern Illinois, a telephone company receives national and local market reports by wireless, and telephones the news at scheduled hours to more than 3000 subscribers in 19 counties.

The operation of wireless receiving apparatus requires comparatively little technical knowledge. When wireless telephony is developed to a degree of simplicity approximating that of the wire telephone special training in wireless will be unnecessary. Meanwhile, the farm boys and girls must be almost wholly depended upon for the receipt of market reports by wireless.

Radio clubs for this purpose are being formed everywhere throughout the country, and farm boys and girls are beginning to play a large part in the marketing of crops.

Newspapers are taking a leading part in radio development; in fact the wireless telephone has been called the "newspaper of the future." By means of it the "reader" will be informed of world events almost as soon as they occur. It will take him around the world before breakfast. The happenings in Downing Street, in Washington, the Wilhelmstrasse, in Cairo, at the Poles—everywhere—will pass in successive review. Daily reports of conditions of growing crops; estimates of yields; weather forecasts, market demand and prices will enable the farmer to co-ordinate production with demand, the only businesslike method of conducting any industry.

And when the day is done, seated comfortably before the fire in his own home, he will attend by radiophone the opera, or the latest Broadway hit.

The wireless has limitless possibilities. And the realization of those possibilities so far as market news is concerned will depend upon the interest manifested by the farmer himself.

Radio—The Wonder of the Age

FIRST among the California farm papers to recognize the importance to agriculture of the wireless telephone, ORCHARD and FARM presents this month another "radio" article, prepared especially for this magazine by an official of the U. S. Department of Agriculture.

ORCHARD and FARM will be glad to answer questions of subscribers concerning radio equipment and methods, and to advise with them upon the installation of receiving sets. Such inquiries should be addressed to "Radio Editor," Orchard and Farm, 1111 South Broadway, Los Angeles.

Watch for more articles on this wonder of the age. No innovation in the past century has so taken the Nation by storm. Be a "radio fan!" It's in the air!

Seated comfortably at his desk, this progressive producer is receiving market and weather reports, marking a great forward step in the effort of science to take the "gamble" out of farming and the sale of farm products.

From Subscribers

Taking No Chances!—Enclosed find one dollar for a year's subscription. If you do not advise me when it expires and I miss a number, I'll raid the office! Highest esteem to all who help to make your valuable magazine!—George Wenzel, Los Angeles.

Keeps Every Copy—I am very much pleased with your little paper and I keep every copy and very frequently look up a back number to read some item I have marked.—Mrs. Annette E. Saxton, Sharp, Nev.

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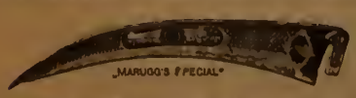

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Petaluma Poultry Pointers

How California Eggs are Graded. Meaning of Different Terms. Must Eggs Be Weighed? How Can the Producer Protect Himself?

By Bert Kay
POULTRY EDITOR OF ORCHARD AND FARM

ONE of my good fellow-poultrymen has launched an idea which has me guessing a little, but perhaps I can give him the information he desires.

"I would greatly appreciate," he says, "information about the California system of grading eggs for market. What are the standard classes and how are they determined? Is each egg weighed individually? And, if so, who does the weighing, the producer or the commission merchant?"

As you no doubt are aware, California eggs (that is, those produced on commercial poultry ranches, not the back yard variety) are given preference on the New York market and are called "California Extras." They consist of white, large eggs, weighing 22 ounces or more to the dozen. These are "real eggs," and usually top the market. California well may be proud of them. They are classified as follows

California Extras—In addition to the above qualifications, eggs so graded must be uniform and large (but not too large, so that they may be packed readily in the crates) must be reasonably clean, and at least 85 per cent full and sweet, allowing a loss of one dozen to the case. There must be no washed eggs.

California Extra Firsts — Same as above, but may contain washed eggs.

California Firsts—Must be large, reasonably clean, fresh, and at least 85 per cent full and sweet. May contain mixed color eggs, washed or otherwise.

Dirties No. 1—Same grade as California Extras, except that soiled eggs may be included.

California Extra Pullets—Must be white, medium-sized, running from 19 to 22 ounces per dozen. Must be reasonably clean, and 85 per cent full and sweet. May contain no washed eggs.

Extra First Pullets—Same as *Extra Pullets*, except that may contain washed eggs.

Under Size Pullets—Fresh eggs, all white, less than 19 ounces per dozen

Storage Packed Extra and *Storage Packed Extra Pullets*—Same grading as California Extras and California Extra Pullets, but must be packed in cases with new fillers throughout.

These cover the situation as far as the commission man and "the Trade" are concerned, but remember that in judging at the shows, *texture of shell* is considered also.

WEIGHING THE EGGS

As to the weighing—almost every producer in Petaluma, and I presume in other commercial districts, weighs the eggs himself before they go to market. Of course, in some cases he doesn't have to weigh them; that is, he can tell off-hand in what class a certain egg will fall. I can tell usually upon handling any egg, to what class it belongs, but in order to avoid guessing I have a little set of egg-scales. These may be purchased at any supply house or store carrying poultry equipment.

When the eggs reach market either through the commission house or the marketing organization, they go through the same process, for the reason that each egg must be inspected. At least, the applies on the local market, although in the East and Middle West, buyers are not so particular. The commission men, in most cases, are forced, for their own protection, to make inspection, and you Mr Producer should do it for yours! Do you "get me?"

In fact we not only weigh the eggs but look for blood spots or other marks of deterioration, as well. We do this for the reason that the commission men will make this inspection and charge against us any such evidence discovered. The grower, too, must candle the eggs just as the commission man does.

Shakman Brothers' 23,000-Hen Farm in the Petaluma District. Old Style Colony Houses Are Shown.

PAYS TO TAKE PAINS

In fact, Petaluma could not get the prices now obtained for eggs from the district without displaying great care in handling and grading. It is like culling the hens, a temporarily expensive and troublesome process, perhaps, but a paying one. Summing it all up, I should say "Be sure the eggs are right before they go to market."

Here at Petaluma, in the "Petaluma Producers'" plant, hundreds of women have been employed cleaning eggs. Now the sand blast has been adopted for cleaning—the same process used for cleaning big buildings in the cities. Of course, this sand blast has put more than a hundred women out of work. Too bad; but it's a sign of the times!

Disposing of the "Broilers"

WHAT are you doing about your broilers, Friend Poultryman? Are you abreast of the times, in disposing of them in the right way? And do you know the best class of broilers?

In Petaluma (and it is being discovered in every district where the markets are observed) the little old White Leghorn is being used more than the larger birds in the "broiler" class. The Eastern markets, just as they have learned to like California eggs, now demand these dainty, rich little White Leghorn broilers instead of the large

[illegible]d, bony, Plymouth Rock or Rhode [illegible]d Red. [illegible]d why do they like the Leghorn, [illegible] and one-fourth to one and one- [illegible] pounds? I'll tell you! You will [illegible]n the menus of most first class [illegible]rants, the chicken orders call [illegible] half portion. Most patrons seem [illegible] satisfied with this dainty bit. It [illegible]nder; is nearly all meat because [illegible]all bone formation, and appar- [illegible]ore developed at the broiler age [illegible] a similar portion from another [illegible]d Again, they can be packed more [illegible]ly and, apparently like the eggs [illegible] California fruits, as well, have [illegible] flavor that consumers like.

WHO GETS THE PROFIT?

[illegible] for market prices, of course it [illegible]ts us when we are receiving only [illegible], 28 or possibly 30 cents for them, [illegible] find the market man asking 55 [illegible] sometimes 60! But what shall we [illegible] about it? Either we must sell to [illegible] Trade, or start a packing plant of [illegible]r own. And judging from the ex- [illegible]ce of the packers last year, it [illegible]s as though we might be better [illegible] just as poultrymen. To be sure, [illegible] have our troubles, but they have [illegible] more than their share. We raise [illegible] stock and feed it; but on the other [illegible]nd we do not pay the high cost of [illegible]r for dressing and packing.

[illegible]metimes I wonder whether it would [illegible] us to fatten our own stock before [illegible]ing to market, as the packer or [illegible]al "fattener" does. But even [illegible]t is a question! Perhaps we had [illegible]r leave it to those who under- [illegible] this special angle of the business [illegible] "stick to our lasts" as producers. [illegible]l no doubt, also, we are better [illegible] stand by our White Leghorns [illegible] hold our reputations as egg- [illegible]ers. Let the Middle West, with [illegible] different variety of feeds and its [illegible] grain ranges, keep the large [illegible] and supply the fat market!

STICK TO THE LAST

We are essentially in the egg busi- [illegible]s, and it is to our advantage that [illegible] White Leghorn, our great egg [illegible]reed, eats about half as much as a Plymouth Rock or Rhode Island, and produces a broiler that is in great de- [illegible]nd.

The packers in the East prefer not [illegible] see egg-producers going into their [illegible]itory; similarly, may we not dis- [illegible]age the introduction into our ter- [illegible]ry of the meat-producing end of [illegible] business? We do not like to keep [illegible] feed the big stock until full grown, [illegible] therefore have reached the con- [illegible]on that under present conditions, [illegible] better off with our established [illegible]m.

[illegible] of the topics for this month [illegible] suggested by the letters of Mr. [illegible] and Mr Evey. I trust their [illegible]ns have been answered. I am [illegible] to have suggestions or inquiries [illegible]ORCHARD and FARM subscrib- [illegible]rt Kay.

Greens Will Do It

[illegible] few of us realize that if we [illegible] to make the same great ef- [illegible]t putting in greens in other [illegible] we are doing at the present [illegible] would increase our annual [illegible]t 2 per cent, with less mor- [illegible] In other words, if I should [illegible]me attention to planting [illegible]le cabbage or alfalfa in the [illegible]even if it were in a hothouse, [illegible] be a profitable practice for me [illegible] you don't believe that, [illegible]But I find that all those fel- [illegible] making a success of their [illegible] much attention to their [illegible] in the winter as they do in [illegible] And the follow who [illegible] yield is feeding as [illegible] the winter as in the [illegible]

[illegible] our green feed [illegible] during the fall [illegible] on that we [illegible]

I find, many times, when some of my friends are sitting around waiting for the rain, they would do 50 per cent better by irrigating for extra crops, or at least irrigating barley and kale and thus keeping it green longer. If the average poultryman only knew the importance of giving green feed all the time, summer or winter, he would never stop irrigating his green patches.

Many folks have asked me at times how I got my chickens to produce more when really I didn't have any better stock than my neighbors. I tell you, friends, as I told them, it was because I wasn't afraid of treating them to green feed all the year around without any "let up." Try it and note the difference.—B. K.

Accredited Hatchery List

THE Sonoma County Farm Bureau, or at least the Poultry Department of the Farm Bureau, is to be congratulated for its regulation of the various local hatcheries.

It has gone so far that it now is censoring the advertising copy of the various hatcheries to see that they do not say anything but the truth about their output. This is something that should be done in every community, and all of the poultrymen would be better off as a result. This is almost a guarantee that any poultryman buying baby chicks from this district is to be protected, and to pay only for what he buys.—B. K.

Napa County Starts Poultry

EVERYBODY'S doing it—raising poultry! Now Napa County and its farm bureau are getting busy and trying to interest their people in the art of poultry raising. This is a new venture, and from all reports they mean business. One of my neighbors said the other day, "If more of these fellows start raising poultry we will have to go out of business." He doesn't realize that numbers will make very little difference if we start to advertise our product. That's what we are all coming to soon. I'm sure of it.

(Communications addressed to Mr. Kay in care of the Editor of ORCHARD and FARM, will be answered direct by mail or through the magazine, as requested.—The Editor)

Cavies for Meat

FOLLOWING closely a recent article in ORCHARD and FARM concerning the breeding of guinea pigs for meat production, comes the announcement of the successful launching of the California Cavy Producers' Association.

This organization was formed particularly to promote this new and interesting branch of the industry. The leader in the breeding of the meat type cavy in California is M. S. Genor, who has developed a strain known as "The Giant" weighing from 3 to 5 pounds at maturity and almost twice as large, he asserts, as the common guinea pig, formerly bred for laboratory purposes.

A large and enthusiastic membership is said to be supporting the new association and it is rumored that one of the developments will be a packing plant for canning prepared cavy meat, for which it is believed an increasing demand will be found.

Mr. Genor believes this new angle of the cavy business will prove even more profitable and far-reaching than the laboratory business.

Good Information—I do not wish to miss a single copy of your valuable paper—too much good information.—B. S. Gibson, Modesto, Cal.

One of Best—ORCHARD and FARM is one of the best farm papers, and I cannot be without it.—F. H. Flint, Del Rey, Cal.

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Tablets Dropped into Drinking Founts Banish Vermin, Make Fowls Grow Faster and Increase Egg Yield

Any poultry raiser can easily rid his flock of lice and mites, make chicken grow faster and increase their egg yield by simply adding minerals to the fowls' drinking water. This does away with all bother, such as dusting, greasing, dipping and spraying. The necessary minerals can now be obtained in convenient tablets, known as Paratabs. Soon after the fowls drink the mineralized water,

all lice and mites leave them. The tablets also act as a tonic conditioner. The health of the fowls quickly improves, they grow faster and the egg yield frequently is doubled. Little chicks that drink freely of the water never will be bothered by mites or lice.

The method is especially recommended for raisers of purebred stock, as there is no risk of soiling the plumage. The tablets are warranted to impart no flavor or odor to the eggs and meat. This remarkable conditioner, egg tonic and lice remedy costs only a trifle and is sold under an absolute guarantee. The tablets are scientifically prepared, perfectly safe and dissolve readily in water.

Any reader of this paper may try them without risk. The laboratories producing Paratabs are so confident of good results that to introduce them to every poultry raiser they offer two big $1 packages for only $1. Send no money, just your name and address—a card will do—and the two $1 packages, enough for 100 gallons of water, will be mailed, and if you are not delighted with results in 10 days—if your chickens are not healthier, laying more eggs and entirely free from lice and mites—your money will be promptly refunded. Don't hesitate to accept this trial offer as you are fully protected by this guarantee.

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Let's Talk Turkey

By Marshall A. Stutsman

PREPARE for culling the turkey flock next fall by studying your stock during the summer. This is the season to remember the rules concerning incubation, fertility, parentage and selection of breeding stock, both male and female.

Eggs should be watched closely and marked. Set down the date, the pen from which they came, and if possible, the number of the hen that layed each egg. Also, mark the young poults with standard poultry punch in the web of the foot and check up the young stock with the parent in order to pick out the strong producers.

If the little fellows show weakness, it is more likely to be due to weakness in the parent stock than to acquired disease.

CARE OF BABY TURKEYS

The youngsters deserve much thought and care. Do not bother the hen while they are hatching. Let her alone until she comes off the nest, which will be in about two days (48 hours) if the nest is left open in the day time. Close it at night for protection. Feed is not necessary during this period.

The ideal first feed for the youngsters consists of insects; therefore, free range with the hen in an alfalfa patch or orchard planted to cover crop is ideal. If this is out of the question, prepared foods should be satisfactory if the stock is healthy. A good cooked food is made as follows:

Use equal parts of ground wheat, barley, oats and corn, add 5 per cent beef scrap and 5 per cent charcoal. Bake in the form of a "Johnny cake," then grind fine and mix with 75 per cent greens and small amount of clean sand for grit. Cooked foods to be most beneficial should be baked or steamed.

Protection at night is very important. Many of the prowling thieves both two and four-footed, are very fond of young turkey.

A clean dry place, sheltered from wind and dampness is essential.

WATCH FOR BLACKHEAD

Diseases may appear at this season. Among the most serious is Blackhead, which causes greater loss than any other turkey disease. Usually it may be traced back to unhealthy parent stock. Bowel trouble usually is a symptom of Blackhead. No certain remedy for Blackhead has yet been found. Culling and improving of the breeding strain is the best thing. The symptoms are deceptive and the only way to be sure of avoiding blackhead is to obtain stock from a strain known to have been free of the disease for a considerable period of time. High production is the best assurance of strong, healthy poults.

That the turkey business is profitable is borne out by facts and figures from established producers. The ideal section for turkeys appears to be the desert, not only the climate but the sandy or gritty soil being especially desirable, and production in desert communities this year is nearly 100 per cent. Much cheap land and even Government land open for homestead entry is available in sections of California adapted to turkey production.

STARTING IN THE BUSINESS

Starting in the business by buying little turkeys is expensive, as they cost usually from 75 cents to $2 each, and one is fortunate if he doesn't lose 60 or 70 per cent of them. I have estimated that 100 hens could be bought at about the same expense as 300 baby chicks, considering a possible loss of two-thirds of the chicks (reducing their number to 100). Three 100 pullets could be fed the first season for $50 provided range were available so that they could "rustle" most of their living from waste grain, greens and insects. However, the 100 hens would be of uniform quality. This would not be true of the young stock. After culling out the 6 and 7-pound pullets there would remain only about 40 pullets, many of which probably would be very ordinary, and the balance of the birds at 7 pounds each, would weigh about 490 pounds, which at 35 cents a pound would bring $171.50. This would not be a very satisfactory result considering the original investment of 300 baby turkeys.

Starting from eggs from good stock hatched under hens is likely to be more successful; in fact, many more. The eggs sell at 75 cents and $1 and with hatches averaging 60 to 70 per cent, one may expect 100 to 120 turkeys from 450 eggs, costing $67.50. The loss in culling would be the same as shown in the preceding statement unless the buyer were fortunate in getting a good class of stock.

THE BEST METHOD

The most certain and satisfactory method of starting in the business is to purchase adult parent stock. Almost any buyer can make comparisons and select from dealers specializing in pure bred turkeys, splendid hens and pullets at $12 to $25 each. The investment of a certain sum of money in such stock is likely to be much more profitable than an equal investment in eggs or young turkeys, for profits will be greater, health better, prices higher and losses less serious. Though this method requires the largest initial outlay, it is likely to be the most economical in the long run.

These facts are based on the writer's personal experience and records of 15 years in the business. We started with the cheapest common turkeys according to the usual methods. Now we use the most expensive wild turkeys to improve our breeding stock.

HATCHING IN INCUBATOR

The incubator method has been followed successfully—although we have never used it, always having had plenty of hens for the occasion. Any one attempting to use the incubator should have a thorough knowledge and plenty of experience in the operation of both the incubator and brooder as well as understanding of the requirements of little turkeys. Usually a high percentage hatch results from the use of incubators but frequently the loss is very heavy.

Here is the experience of one of my neighbors! During 1915 he hatched 1500 eggs in an incubator. About 40 per cent hatched. All were lost on account of the youngsters refusing to eat. The following year they tried again. They raised 1000 fine birds. These eggs came from very fine parent stock and proved that artificial incubation may be carried out at a profit if the birds are allowed to range on stubble and alfalfa after June 15 to July 1, until marketing.

It might be added that during the second year they used cold air brooders and put about 25 per cent of little chicks with the young turkeys to show them how to eat. This proved very successful.

Our experience has shown that the introduction of wild blood is very beneficial in hatching with incubators to the young poults seems to produce vigor and vitality sufficient to finish their living until fall when they are past the danger point.

Oat Hulls as Poultry Litter

ACCUMULATING a quantity of oat hulls in the process of milling oats for table purposes, the Sperry Flour Company decided to test the hulls on their Experimental Farm, as a poultry litter.

After a two-year test using the material as a litter for chicks, as well as adult stock, it has been found the hulls are even more satisfactory than straw.

In order to check the results obtained at the Sperry Experimental Farm, early a carload was distributed gratis among poultrymen of different sections. Favorable reports were received from them.

The hulls, being obtained in the process of milling oats for table purposes, are clean and free from all objectionable matter.

On account of their lightness they are readily scattered around the floor of the poultry house, which greatly eliminates the accumulation of moisture so pronounced in the use of straw.

They readily absorb the droppings, yet do not pack and can be raked when other litters would require a complete change.

They are very desirable for feeding scratch feed because the grain quickly sifts below the surface, which does not pack. This compels the fowls to work for their scratch feed and gives them needed exercise.

As a litter for baby chicks they are particularly valuable, and eliminate the labor of chopping straw or alfalfa hay for the purpose. They contain a certain percentage of oat "groats," and when the material is placed about two inches thick on the brooder house floor, the chicks lose no time in scratching for these particles of oats. Searching for feed in such a litter keeps them busy and helps eliminate such vices as toe pickling.—F. E. LA SHELLE JR.

How to Make a Portable Hogpen

IT IS possible to make a portable fence that will hold hogs. (See illustration.) One panel and one upright support are shown; all other panels are the same for the entire length of the fence.

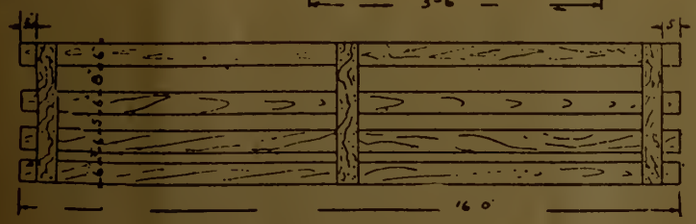
The ends of the panels overlap each other about three inches to permit the end cleats to fit close against the slanting legs of the sawbuck support. The notches in the cross leg and in the brace below engage the ends of the long boards of the fence panel.

Every cross leg support must be the same size and shape, with even-sized notches the same distance apart. They are best made in a pack or form to hold each piece in place while it is being cut. Use slim wire nails long enough to clinch. The boards are spaced to fit the notches accurately, and panels exactly alike.

A form also is necessary for making the panels in order to space the boards the same each time and to make them come square, straight and true. It is better to have the boards cut at the lumber yard. If the panels and upright sawbuck support are carefully made, the fence will go together easily and stand firmly in place.

Furthermore, when the panels and the cross-legged supports are carefully made, the fence may be erected easily and quickly. The panels may be 12 or 16 feet long and the material may be light or heavy, according to the size of the animals to be pastured.

Generally these portable fences are used to confine pigs to one side of a cover crop field in order to feed it down to the best advantage.—HERBERT A. SHEARER.



Accredited Herds in California

THAT progressive California cattle breeders recognize the opportunities and benefits to be derived from Federal and State Tuberculosis-free accredited herd movement is evidenced by the rapidity with which such owners are forwarding applications to join the movement.

It is difficult for the Federal and State departments to keep pace with the demand for this service. The work, however, is being inaugurated as rapidly as possible.

Twenty-six applications already are in hand. Approximately 3700 purebred dairy cattle are included, and the herds of many of California's most prominent breeders appear. Of the herds already enrolled, the majority of the dairy type, although several prominent Hereford and Shorthorn establishments are included.

The value of accredited herd work should be recognized. And while many cattle breeders have been opposed to the plan, apparently because they are fully convinced of its advantages, nevertheless, many have recognized the advantages of forcing the California breeders to compete with producers from States where accredited herd work has already been in operation. It is therefore quite evident that herds in California receiving early recognition will have a great advantage over those accredited in succeeding years.

The business of raising purebred cattle successfully ultimately will depend to a large extent upon the attraction of buyers from other States, thereby affording California the opportunity of becoming one of the leading producers of high grade cattle to supply the United States, Canada, Mexico, and the Orient. For some time the signs have been pointing this way. California has come forward as a dairy State with phenomenal rapidity during the past 10 years, and as a butter producing State we now rank fourth.

During recent years we have demonstrated at the International Livestock Show at Chicago that our State easily can develop the best beef cattle, as well as the highest producers of milk.

It is becoming widely known that California's mild climate is ideal for the raising of livestock. Our cattle suffer less from extremes of heat and cold than do the herds in the middle west northwest and east, thus inducing more rapid growth. Beef cattle mature earlier and our dairy cows are fa-

(Continued on Page 34)

You Don't Pay For a De Laval It Pays For Itself

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Even if you don't own a De Laval you are probably paying for one anyway—especially if you are using a cheap, inferior or badly worn separator, or are skimming by hand—in the cream that is being lost. No other method of separating cream from milk is so efficient, easy and economical in the long run as the De Laval.

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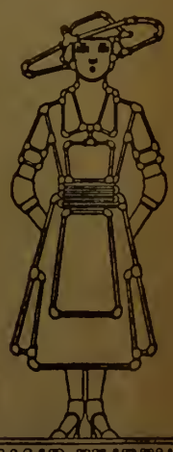

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Don't Overlook the "Farmers' Classified Market Place." A Feast of Bargains. Page 30.

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W. A. LEE, Covina, Cal.

Why I Believe in the Black Monukka Grape

By G. D. Hussey

THE Black Monukka is probably the Munaqqa, the favorite raisin grape of Persia. According to Archibald F. Barron of the Royal Horticultural Society of London, it came to England from India and was sent to the United States Department of Agriculture by the Reverend W. Wilks of the R. H. S. of London.

The Monukka is a purplish-black grape with firm pulp and pleasing flavor. The fruit is practically seedless; I say "practically" because, while abortive seeds occur in most of the berries, they are soft, do not mature, and are not noticeable in eating. The bunches are large, conical, shouldered and well filled. The berries are larger than the Sultanina (Thompson seedless) and ripen several days earlier. The few shipments which have been made to the Eastern market of fresh Black Monukkas have succeeded so well that there seems a strong probability this variety may be a successful rival of the Sultanina as an early table grape.

BLACK MONUKKA RAISINS

Monukka raisins are of excellent appearance, texture and flavor. They constitute a type of raisin entirely new to commerce, but judging by the reception they have met from the few consumers to whom they have been offered, they should have no difficulty in finding a ready market.

The vine of the Monukka is even more vigorous than that of the Sultanina. It develops quickly and comes into bearing early; it bears well with short or long pruning. When cane-pruned it has a tendency to overbear. It is probably best suited to the Cordon system of pruning with medium spurs.

MOST PROMISING GRAPE

Quoting from Prof. Frederic T. Bioletti, who is, in my estimation, the best authority on grapes in the United States if not in the world: "This is the most promising grape which has been introduced into California for many years. It has been marketed successfully as a table, a shipping and a raisin grape."

The Monukka, as well as the Thompson, will thrive on almost any soil. It is a dual-purpose variety. For shipping it is the earliest we have, being several days ahead of the Sultanina.

(Continued on Page 23)

A Prophecy Fulfilled

THAT the Black Monukka grape would become one of the most popular and profitable varieties grown in California was predicted by ORCHARD and FARM, in an article appearing in the October, 1920, number.

At this time Prof. Geo. C. Hussman of the U. S. Department of Agriculture was quoted as saying "The Black Monukka is the first entirely successful dual-purpose table and raisin grape, being superior to any existing variety for both purposes. It is expected that in time the Black Monukka may even supplant the Thompson Seedless."

Now there is a wild scramble for Black Monukka cuttings. One of the most enthusiastic advocates of this variety is G. D. Hussey, experienced vineyardist and nurseryman, who has made a special study of its possibilities, and from whom ORCHARD and FARM requested the accompanying statement. — The Editor

Science Made Simple

By Adam Phule

Article IV—The Salt and Pepper Tree

NOW that I look back upon my early experiments in crossing the salt bush and the pepper tree, I wonder that the simple plan was not evolved years sooner.

Prof. Phule

The advantages of such a cross are apparent, the object being, of course, to produce a combined product, with the properties of both salt and pepper, mixed in the correct proportions for seasoning.

Yet, simple as the achievement may seem, numerous difficulties had to be surmounted. The first problem was to bring about a successful union. Like most grafts, the salt-and-pepper enterprise has been profitable, but hazardous. However, I can proclaim myself without undue egotism or fear of contradiction, one of the most successful grafters in America, and, needless to say, I achieved this object quickly.

Having solved the grafting problem, I made the interesting discovery that (as might be expected in producing a seasonable hybrid) there were seasonal conflicts. In other words, the salt bush produces its crystals during summer months, when they are less likely to be dissolved by the rain, while the sap of the pepper tree is impregnated with pepper only during the winter.

The remarkable result of this conflict of nature was a compromise, giving a double harvest—spring and fall.

The harvesting, however, was far from simple. I found that in order to dislodge all the crystals it was necessary to give each tree a vigorous shaking. And invariably there resulted such a shower of the excess pepper dust (deposited upon the leaves through evaporation of the sap) that the harvester was seized with a violent fit of sneezing, while his eyes also were affected.

This leads me to believe that commercial growers will be glad to pay a premium for hardened salt-and-pepper shakers.

Science readily explains the mixture of the salt and pepper properties. The bush, of course, takes the salts from the soil in solution in the natural irrigating water, while the pepper tree is similar in its habits to the vine except that the sap contains pepper instead of sugar.

Now, I found that by regulating the supply of irrigating water I could control quite easily the salt content of the hybrid, thus securing a final product with a ratio of about 100 parts salt to one part pepper.

The crystals, after being shaken from the tree, are simply ground, when they are ready for kitchen or table use.

I predict a wonderful future for this plant, as its product, through doing away with one container of the table now universally used, will be heralded as a great space saver in the modern restaurant, apartment, kitchenette and breakfast nook.

[In his next article, Professor Phule promised to tell ORCHARD and FARMERS about his new dual purpose food, the "peach nut"—Editor]

The Monukka Grape

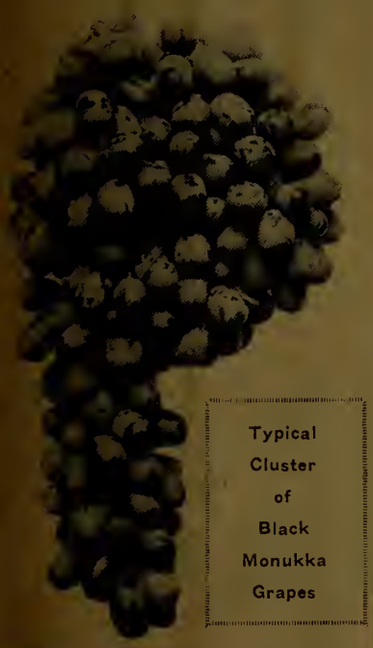
(Continued from Page 22)

[illegible]ina. Its color always helps the sale. [illegible] shipping qualities are better than those of the Sultanina.

As a raisin variety, I believe there will always be a premium on the Monukka, although I feel safe in saying that very few Monukka raisins will be made for several years. Practically all that can be produced will be sold fresh.

While not known as a beverage grape, the Monukka, especially when its juice is mixed with other varieties, is excellent for this purpose.

It is dangerous to recommend certain varieties for planting in every



Typical Cluster of Black Monukka Grapes

[illegible]ty, as a variety which may be [illegible]ly suited for one district may be [illegible] unprofitable in another.

But, all in all, the Monukka appears to supply the demand for a "general-purpose" grape more satisfactorily than any other. It is being grown in all parts of the State and, because of its wonderful properties, I believe sincerely in its future.

Marketing Fruit

(Continued from Page 11)

[illegible]cts of Oregon competition. Compared with other California fruits, apricots are not so important for shipping, and they have little competition. The Winters district of Solano and Yolo Counties is first on the market, with San Joaquin Valley and Santa Clara Valley following. A big percentage of California's apricots are canned and dried.

Peaches from California meet competition from many points, mainly Georgia, the Ozark Mountain section of Missouri, Oklahoma and Michigan. However the earlier varieties have a fairly free time of it. Elbertas from California seem to move best, one season and another. The season is at its height in California about July 20th.

Shipping plums is almost a business by itself, for the reason that there are so many varieties to consider. A market man tells me that his company has handled 60 commercial varieties. The tendency now is to restrict the number of varieties, but mature trees, already bearing fruit, cannot be abandoned and their product must be marketed. Tragedy plums are the most popular California variety.

While peaches and plums are moving in volume, early Bartlett pears begin to come from the Sacramento River district. Placer County quickly follows until the flood of the pear season is reached and then the mountain county of Eldorado, Placer's higher reaches and Nevada County begin to reach market with their product. The late pears of the season move from Santa Clara Valley. The market man tells me there are 15 commercial va[illegible] Bartletts over[illegible] completely th[illegible]

(Continued on Page 31)

From Orchard to Market with International Motor Trucks

THROUGHOUT the growing and marketing season there are countless jobs that can be done quickly and to the best advantage with an International Motor Truck. It speeds up spraying, pruning, and cultivating by hauling tools and materials, and saves the time of several men in picking season by its greater capacity and speed in hauling the fruit to the central station. When the fruit is ready for market the International again comes into service and transports the crop to the shipping point safely, without delay or interruption.

Years of experience in building machines and tools for orchard and farm use stand back of the present highly-developed line of International Motor Trucks. All chassis parts are well-designed and built with a reserve to withstand the extra strains. The engine is powerful and accessible.

There are styles and sizes for every orchard or farm — capacities range from the 1500-lb. Speed Truck to the 10,000-lb. heavy-duty model. Special bodies for fruit hauling are available on all chassis.

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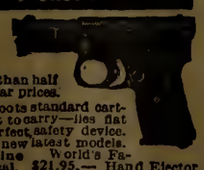
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Has Jack Frost Nipped You?

Probably not, for you dress warmly. There is no secret to dressing for the cold, but there is an "inside story," never before made public, of the frost prevention in the citrus belt of Southern California.

Edward Insley, secretary of the Frost Prevention Association of Covina, reveals for the first time on page eight of this issue, the surprising methods that have been adopted to defeat the most deadly enemy of the citrus grower.

Dehydrated Cherries

By Arthur W. Christie

ASSISTANT PROFESSOR OF FRUIT PRODUCTS, UNIVERSITY OF CALIFORNIA

The "Old-New" Science

DEHYDRATION is old in theory but new in its scientific application. The University of California, under the direction of Professors Cruess and Christie, is doing some revolutionary and very important work with different food products. ORCHARD and FARM has taken the lead in giving publicity to their discoveries. The accompanying article is one of a series prepared by Professor Christie, especially for this magazine. Every producer should follow closely the important developments described in these papers.—The Editor.

"CHERRIES are ripe" is the first call of the California fruit season. The Sacramento Valley and foothill sections ship the first cherries of the year to the fruit-hungry cities of the east.

In these early sections practically all the crop is shipped fresh and the small amount of culls which result in the careful packing are readily disposed of locally.

In the later districts—chiefly Santa Clara, Sonoma, Napa and Alameda counties—considerable quantities of the cherries are canned, resulting in an accumulation of culls, which because of cracks, bruises or over-ripeness, are not suitable for this purpose. It also happens occasionally that late spring rains or even fogs cause a large percentage of the ripening cherries to split, making them valueless for shipment or canning. In these events, the profitable disposal of the crop becomes a serious problem.

SUN-DRYING VS. EVAPORATION

Sun-drying has been resorted to in some cases to prevent loss. The cherries are spread upon ordinary sun-drying trays at the rate of 2 pounds to the square foot. Two hours' sulfuring generally is given white varieties to prevent their turning dark brown. After exposure to the sun for 3 days to a week, two tray loads are condensed and the trays stacked until the cherries are dry, after which they are emptied into boxes or bins to equalize the moisture content.

Stemmed, dried cherries brought, in 1920, 10 to 15 cents per pound, the white cherries bringing the higher price. If ripe cherries are carefully sulfured and sun dried, an excellent product is obtained, although not quite the equal of dehydrated cherries in appearance and flavor. Since the demand for dried cherries is small and the price uncertain, the drying of this fruit has received little attention except as a method of salvage.

EXPERIMENTS NECESSARY

However, the present rapid growth of dehydration in California makes it desirable to ascertain the suitability for dehydration of all our many fruits. Satisfactory methods of production, estimates of cost and the quality and uses of the dehydrated product must be determined carefully before the commercial value can be estimated.

With these facts in mind, the writer conducted in May and June, 1921, a series of experiments on the dehydration of cherries. A number of carefully controlled, small scale tests first were made in a laboratory size dehydrater, followed by a commercial size test at the dehydrating plant of the Setchell de Journell Company at Santa Rosa. The results were very gratifying and sufficiently interesting to warrant the following brief resume:

Cherries for dehydration should be thoroughly ripe. Those too soft and ripe for fresh shipment or even canning are ideal for dehydrating because they give the maximum yield of dried product, of full flavor and color. Cherries which have been cracked by rain, bruised or even bird-pecked, can be made into a very attractive dried product in which the original injury is not noticeable.

Cherries may be dehydrated just as readily without preliminary stemming and pitting, although the pitted cherry is preferable for culinary purposes. Many canneries have automatic machinery for stemming and pitting cherries at small cost. Cherries lose about 2 per cent of their weight in stems and 18 per cent in pits. The stems and pits are not valueless however, but can be dried and sold for the manufacture of oil, flavoring extract, etc.

A Central California Dehydrating Plant (Above) and a "Handfull" of Black Tartarian Cherries as They Appeared After Dehydration.

LYE DIPPING REQUIRED

Unpitted cherries should be lye-dipped before drying, in a manner similar to prunes. A boiling dip containing ¾ per cent of lye or 2 per cent of sodium carbonate (Sal Soda) will check the skins of cherries and permit more rapid and uniform drying than is obtainable with unpitted cherries. The time of immersion varies from 5 seconds for Royal Anne to 20 seconds for Black Tartarian. Steaming accomplishes a similar result but is too severe, tending to crack and split the cherries, with consequent loss of juice.

Black or dark red varieties should not be sulfured because sulfuring bleaches them to a light red color. White varieties and the Royal Anne should be sulfured for 15 minutes after dipping, in order to preserve their natural color. Longer sulfuring is dangerous, as it imparts a sulfurous taste.

Cherries may be dehydrated on wooden or screen trays, the latter permitting more rapid drying. If a plentiful supply of heated air is well distributed over the trays they may be spread at the rate of 4 pounds per square foot. But in dehydraters having sluggish or uneven air-flow it is safer to load only 2 to 3 pounds per square foot.

Cherries are one of the easiest fruits to dehydrate, are dried quickly, and will withstand relatively high temperatures without injury. Two different systems were tried. In the first, drying began at 130°, the temperature being gradually increased so as to finish the drying at 170°. With a tray load of 2 pounds per square foot and

[illegible] of 500 lineal feet per minute [illegible] the trays, the drying time on [illegible] Tartarians was 7 hours and on [illegible] Annes 8½ hours.

[illegible]mmed and pitted cherries, not be[illegible] dipped, required about an hour [illegible]. The second system was the [illegible] in all respects except that the [illegible]rries were first subjected to a temperature of 210° which gradually was [illegible]ed so as to complete drying at [illegible]. The drying time in this case [illegible] approximately 5 hours. When the [illegible] load was increased to 4 pounds [illegible] square foot, essentially the same [illegible]ng time was maintained by in[illegible]ing the air velocity to 1000 feet [illegible]inute.

[illegible] commercial application of these [illegible]ts was established when 17 tons [illegible]nery-culled cherries were suc[illegible]fully dehydrated in the same time [illegible] under the same conditions as pre[illegible]y determined in the laboratory.

After drying, the cherries are easily [illegible]med by rubbing them lightly on a [illegible]n tray, the brittle stems breaking [illegible] and falling through the screen. [illegible]ming causes the loss of about 2 [illegible] cent of the dry weight.

[illegible]he drying ratio of unpitted Black [illegible]tarian cherries varied from 2.8 to [illegible]1. If thoroughly ripe, the ratio [illegible]uld not exceed 3:1. For Royal Anne [illegible]rries, the ratio varied from 3.5 to [illegible] depending on ripeness. Pitted [illegible]rries gave a gross shrinkage of [illegible]rly 5.1.

ANALYSIS OF COST

[illegible] exact figures on the cost of de[illegible]ation are available but because of [illegible] similarity in the dehydration of [illegible]o fruits, a close estimate is pos[illegible]e from the carefully determined [illegible] of dehydrating prunes. Prunes [illegible] dehydrated last year for $6.50 [illegible] green ton, including overhead costs. [illegible]e cherries dry much more rapidly, [illegible] cost per ton for superintendence and power would be lower for cherries. Sulfuring and stemming would partially counterbalance this reduction. This would make the cost of dehydrating unpitted cherries about 1 cent per dry pound.

Dehydrated cherries are a truly excellent dried fruit. The pitted cherries are especially convenient and tasty when used in pies and other prepared dishes, being equal in color and flavor to canned fruit. However, their greater shrinkage and cost of production will always make the pitted product relatively expensive.

Recently several California dried fruits, such as raisins, prunes, figs, and dates in small 5 and 10 cent cartons have appeared in countless candy stores, cigar stands, fruit stands and other places catering to the sweet tooth of Americans. The tremendous sales of these products attest their popularity.

POSSIBILITIES ARE GREAT

Dehydrated cherries similarly packed should meet as ready a sale. For this purpose the unpitted black cherries are ideal. Their shiny reddish black color and sweet concentrated "wild cherry" flavor absorbed from the pit during drying make them "taste like more."

Allowing the grower 5 cents per pound for ripe black cherries with a drying ratio of 3.1, plus 1 cent per pound for drying, making a total of 16 cents per dry pound produced, and making a liberal estimate for packing and marketing by doubling this cost, it should not be difficult for 5 cent cartons of dehydrated cherries to compete with other dried fruits when by comparison the 5 cent package of "Sun-Maid" raisins containing 1½ ounces is equivalent to a retail price of over 53 cents per pound. Easy-to-dry and easy-to-pack dehydrated cherries also should be easy to sell.

A Profitable Roadside Business

THAT a large acreage is not essential to success when the land is [illegible]d upon a much-traveled boule[illegible]d is shown by the achievement of [illegible] V. Brown, a tenant farmer near [illegible]kershim, Cal.,

[illegible]r. Brown, a rather elderly man, [illegible]swering the call of patriotism during [illegible] war, left his city home and took [illegible] the growing of food. As a side issue [illegible] hobby, he planted a flower garden. [illegible] successful was he with his flowers [illegible]at he established a little nursery [illegible]om which has grown his present [illegible]fitable business. In fact, the little [illegible]ner of his land devoted to the flow[illegible] proved more profitable than the [illegible] given over to field crops, and [illegible]ally he abandoned entirely all [illegible] the nursery project.

From less than one acre of land he now makes a good living selling potted plants to passing motorists. His prices, because of the direct selling method, are much lower than those of city nurserymen. Pleased customers send their friends, for not only are his prices, lower, but the quality of his goods is high.

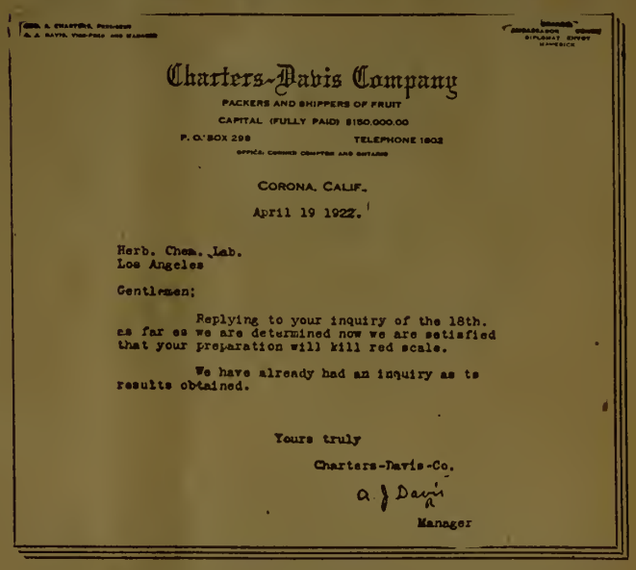
He has a small stand at the roadside where he displays plants in pots and baskets, together with signs telling of the varieties on hand. His Sunday sales usually exceed $25 while he does a good business during the week.

Mr. Brown's knowledge of flowers and their habits was gained from his backyard garden in the city. He has "ridden his hobby" until it has become a profitable business.

This Rancher Saw Into the Future

THE occupant of this little temporary home waited many years in [illegible]r to realize his ambition—the ownership of a modern house. [illegible] that he is able to build, the site is ready. Carefully chosen [illegible] out according to the plan of his future dwelling, meanwhile [illegible]ity. As a result, the ultimate homestead will be [illegible] comfortable and beautiful. It pays to look ahead!

Fumi-Spray Kills Red Scale



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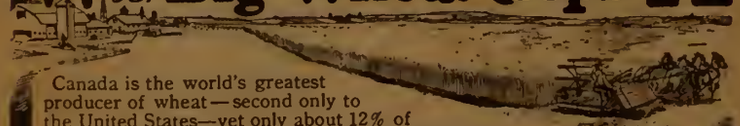

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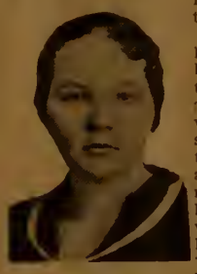
YOUR GARDEN of FLOWERS

by Helen Temple

Vines in California

IN THE interior we must have vines; they furnish summer comfort. On the coast, however, they are not essential to our comfort. Here they are needed only as screens and for their ornamental effect.



Helen Temple

Our vines for the hot valleys should be of the varieties that grow rapidly and die down in the winter, for in these sections we need the winter sunshine as well as the summer shade. In the interior the heavy vine with thick foliage is used as a "bumper" for the hot winds and sun rays.

The vines grown chiefly for beauty and effect, such as those planted in our permanent gardens, seldom develop as quickly as their more prolific relatives, but on the other hand they are usually permanent, growing year after year until they seem almost a part of the walls or building upon which they are trained.

RAPIDLY GROWING VINES

A reader from Nevada once asked me please to remember that ORCHARD and FARM also was read in Nevada. I do have in mind our Nevada readers and have explained that my instructions for our readers in Interior California may be followed quite safely by them. Likewise, Nevada readers will be assured of success if they plant vines recommended to our Interior subscribers.

THE KUDZU VINE

The Kudzu grows readily from seed, or one may purchase year-old or two-year-old plants from the nursery. Tank houses, large porches and arbors often are covered in a single season with the vine, which furnishes a splendid shade during the summer. In fact, the Kudzu vine usually grows fifty feet in a single season.

Where the frosts are heavy, the vine dies down during the winter, but early the following spring it comes up again and starts its journey anew. Since it is a rapid grower its leaves are quite large and coarse veined and the flowers are borne in great clusters. The blossoms are a dark lilac and fragrant, while the leaves and foliage are a very dark green. This color combination, coupled with the dense shade, makes the Kudzu vine ideal for the warm interior.

When starting the Kudzu from seed either plant in a seed bed and transplant in the early spring, or sow the seed about eighteen inches apart in their permanent location in April. When using the latter method, dig a trench and fill with a good seed-bed soil of leaf-mould and sand. It is well to fill the hole in which the young plants are set also with the richer soil. After they are well established, the Kudzu will grow year after year with little or no care, except a little water through the warm weather. Cattle, sheep and goats are quite fond of Kudzu "trimmings."

THE CINNAMON VINE

The Cinnamon vine grows from a tuber, which should be set out in March or April. It does well in any good loamy soil. It requires a more sheltered situation than the Kudzu to make the best growth, but, like the Kudzu, is a rapid grower. It averages in growth about thirty feet each season.

Foliage of the Cinnamon vine is a dark green and the flowers are small and white, with a delicate odor of cinnamon. The leaves of the Cinnamon vine are quite odd and attractive; in fact, the vine makes an attractive covering for any arbor or fence. It is often used as a covering for porches in the interior regions, as it dies down in the fall when one does not need for shade.

CHINESE WISTARIA

The Chinese Wistaria is one of our hardy climbers, growing [illegible] twelve feet in a season. It is easily trained and may be pruned without danger of ruining the vine. The Orientals grow it "as they like," training and pruning it to give a desired effect, often forcing the vine to show a long line of flower clusters almost as evenly hung as a curtain.

Wistarias are very effective both on the coast and in the interior. When grown on the coast the vines should be pruned rather severely during the winter. In the interior the pruning should not be so severe, except where sunshine is more desired than the vine.

The flowers of the common variety are a dark lilac, blooming in the spring and fall. In Southern California the Wistaria has become very popular, often being used for decorative purposes alone. It will do well in a good loamy soil. The vine may be grown from seed, or plants may be purchased from your nurseryman. Sow in [illegible] and transplant in early spring.

THE TUBEROUS WISTARIA

The tuberous rooted Wistaria is very hardy, growing about nine feet in a season, then dying down and growing again the following spring. The blossoms and foliage resemble the Wistaria in every particular with the exception of size.

The tuberous Wistaria has smaller leaves and smaller clusters of flowers. The blossoms have a distinct violet scent, which combines well with that of the vine itself.

Plant in a friable loam which has been enriched with well rotted manure. Should be set out in early [illegible] using about three bulbs in a [illegible] to obtain the desired effect. It is used for trellis work, as a climber on porch entrances or as a covering for stone walls.

MORNING GLORY VINE

We are all acquainted with the ordinary Morning Glory vine. There are however new varieties of the Morning Glory family which probably are not familiar to many of us. For instance the Giant Japanese and the new [illegible] varieties are new. The "fuchsia-flowered" also is new. The Giant Japanese is very large, ranging in color from pure white to an extremely dark purple. The colors of this Morning Glory are all shades of blue, pink and purple, slate, in fact, almost every shade.

There are also many variegated varieties, with splotches and splashes and edgings in all colors and combinations. The double Morning Glories are excellent, rapidly growing vines, bearing heavy crops of double blooms of the same colors. The fuchsia-flowered Morning Glory does not produce the heavy vine of the others. The vines are slender, the leaves are [illegible] fingered and the blossoms are a rosy pink. This vine is a rapid grower.

When planting Morning Glory seed, soak them overnight in warm water. They grow easily in almost any kind of soil that has been properly prepared before planting. In the interior they need more water than on the coast. On the coast, however, they often grow and thrive with very little irrigation.

MOON-FLOWER VINE

The Moon-Flower like the Morning Glory, is well known. There are two varieties, however, two of [illegible] the 'hybrid' and the 'ivy-leaved.' The hybrid Moon-Flower averages a growth of thirty feet in a season.

about four weeks earlier than ordinary varieties. The blossoms very large, opening from three to ches across. The ivy-leaved opens the morning rather than at night. ers are pink and cream white.

The Moon-Flower vine should be eated much in the same manner as Morning Glory, their habits being ar. Both are especially suited to interior. If undisturbed they will eed themselves year after year. ey are rapid and luxuriant growers.

PASSION FLOWER VINE

The Passion Flower grows quickly, overing large buildings and fences in short time. It becomes too rank in owth, in fact, if not restrained occaonally with the pruning shears. It perennial and does best in our semiopical regions. It will stand very tle frost; therefore one feels scarcely paid in planting it where the frosts early. There are several varieties. he flowers are borne in great numers, making a striking effect when e vine is in full flower. Sow the seed hotbed or cold frame in early or late winter, then transplant open ground in May. Sow in friable soil about one-eighth of inch deep and keep moist. When anting in the interior take up the lants before the frosts, planting in ots filled with equal portions of leafould, loam and sand. On the coast Passion vine often "runs away itself," thus requiring ruthless ming occasionally.

(Vines in California" will be continued July.)

What to Do in June

JUNE finds our garden soil thoroughly dry unless we have irrigated isely and well. Irrigation and cultivation are the chief duties n our gardens this month. rrigate thoroughly and not too often. A few minutes in e garden with the sprinkler is not sufficient; in fact, little water so applied is most worse than no water t all.

The lawn, small plants nd seedlings should be irrigated with a fine spray about twice a week, thoroughly. Let the soil take as much water as it will hold without "running off." Plants and flowers planted in long rows are most easily irrigated with trenches. Thoroughly soak the plants once or twice every two weeks. Fill in the trenches as quickly as the hoe and rake can be used without "sticking."

Once a week the garden should have "shower bath" when the air is dry d dusty. Trees and shrubs should ve a basin about them. Let the hose n into the basin slowly until the soil d basin will hold no more, about e in two weeks. Break up the top t on the irrigated soil as soon as ble.

any of our vines will take root layers and cuttings this month. Wistaria roots easily from layers June. Vines are growing rapidly s month. Spend a little time in ining and tying them.

tart chrysanthemum cuttings in for late flowers, also pinch back new growth and cut the chrysanmum suckers.

ardy annuals and perennials still y be started. Protect seed boxes the hot sun

hlias, cannas and gladioli still may t out. Mulch the soil thoroughly r them after irrigation.

Qestions and Answers

Q. Poinsettias grow out-of-doors in Glenn County? How are they started ared for?—Mrs. R. M., Vallejo, Calif.

A. Glenn County is quite a dis north for the Poinsettia. Howwith protection against the ele, it could be grown. Often in orth gardeners grow Poinsettias s until winter, then pot them house, where they bloom for

To start them, use cuts of the wood 8 to 15 inches in length. or very sandy soil. If their permanent lo to set out three ure shrub. Protect the cuttings with a piece of shake on the windy side. Keep moist.

(3) Poinsettias should be mulched with well rotted manure in the fall, followed by a thorough soaking. This will furnish plant food. In two or three weeks, spade the mulch under. Do not allow the soil to dry out. In the spring, prune and cut all old wood back very close.

I WOULD like a wild flower garden. What shall I plant for best effects? Where are seed and plants obtainable?—Miss J. M. T., Los Angeles.

Best effects in the wild flower garden are obtained through the division of colors. Quite often wild flowers of California are very distinct in their colorings. If you have a protected corner, plant all varieties of fern, with flowers such as the California saxifrage and wood anemone. Any plants or flowers found may be successfully grown in home gardens if the locations are similar.

Those which are found on the rocky hillside should be used in a sunny rockery. Those found along streams, do well about a pool. Poppies and tulips make beautiful beds when planted irregularly.

LESSONS FROM NATURE

Tiger lilies make excellent backgrounds. One or two holly trees should be started. Indian paint brushes make bright splotches of color when planted in groups near a white flower, or one almost white. Sometimes you can find a variety of wild flower seed in one of the large seed stores, in separate packages. It is almost always possible to obtain a package of mixed wild flower seed in the large stores.

I advise, however, that you obtain your seed and plants directly from Mother Nature. She gives authentic directions for planting. I expect to give a brief outline of our best known wild flowers in the near future. The article will cover the finding, planting and arrangement of wild flowers.

WHAT will grow in very heavy, dark soil shaded by tall trees? I have an abundance of water to use.—Mrs. J. R. B. Ceres, California.

Trees usually draw all available plant food and moisture from the soil surrounding them. However, if ample water and fertilizer are available, there are several plants that will grow in the heavy soil. Violets will do nicely in the interior when protected in this manner. Asperula is a hardy annual, which does well in the shade; also Lippia grass. Furthermore, these will grow in the heavy soil. If the soil is "lightened," there are many other plants that grow well in the shade.

Kitchen Helps

CORNSTARCH is a good substitute for eggs in cookies or doughnuts. One tablespoon equals one egg.

When freezing ice cream, if the salt has been used up, clip newspapers into fine pieces and use in place of salt.

When polishing a stove, lather the hands wtih soap. The soap dries into the hands and the polish will not stain. —Mrs. J. T. Murphy, Gilroy, Cal. (H)

Use one teaspoonful soda with one cup molasses.

Use one-third cup liquid for each cup flour for biscuit.

Use one-half cup liquid for each cup flour in muffins.

Use two-thirds cup liquid for each cup flour for griddlecakes.

Use one teaspoonful salt for one quart liquid.

Use one-half teaspoonful salt to one cup flour for bread.

An Apron Hint

Instead of spending a day or so making a batch of kitchen aprons, try one of those checked rubberized aprons, which will take their place and eliminate much laundering, besides time, money and sewing. And too, they are fine when washing clothes, dishes or the baby.

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These are but a few of the departments in ORCHARD and FARM'S "Classified Market Place." Note the many bargains and opportunities in this section of ORCHARD and FARM, Pages 30 and 31.

Do You Know

—That the Farmers' Classified Market Place, Pages 30 and 31, contains scores of money-making and money-saving announcements?

—That it is one of the most valuable and interesting departments of ORCHARD and FARM?

—That every subscriber should read these pages every month?

It Will Pay You to Read the "Liners"

"Try It and See!"

ISABEL SINCLAIR'S PAGE

For the Woman in the Home

June— the month of brides and roses,
Picture hats; effective poses—
Gallant swains and lovely charmers,
Dreamy days—and busy farmers!

Dear Friends:.

A great many parents overlook one of the most interesting games in the world, and one of the most profitable—that of determining what profession or vocation the child should follow.

The parents who start out by making the decision themselves have a good beginning for a bad ending, and by taking the decision out of the hands of the rightful judge—the child—stand a good chance of thwarting the supreme purpose of two lives.

When the parent entertains, I might say cherishes, this preconceived idea of his child's future, the child has been robbed at the outset of the right start and thereafter his struggle for success is hampered.

Many times in after life he breaks away from his fetters and makes a fair showing, but what of the big success he had every right to be?

When this human destiny, temporarily left to our guidance, means more to us than the enforcement of our beloved self-will, we will begin our observations very early and get all the joy and thrills due us in this interesting game of child development.

Forget entirely the thing you so much wanted to accomplish in life, and stop trying to realize its fulfillment in your child. Set aside all of your admiration and respect for any certain profession and have your mind keen and ready for the first signs of ability in the youngster..

When the child shows any decided tendency towards any one certain thing, that is where your real work begins. You are to mould and guide his development and help him attain the greatest success possible.

Do not try to make a musician out of a baseball player. Better do your part in giving the world a successful baseball player than inflict a "ham" musician upon suffering humanity just because you "so wanted your child to be a musician."

Think it over. Try to realize what you will gain instead of lose by helping to develop instead of trying to create.

Instead of a life-long dormant resentment towards you, you will have then eternal gratitude and love.

Sincerely,

Isabel Sinclair

Prize Letter

(Continued From Page 5)

as they please. They keep their own accounts.

Each year after having their father takes the boys hunting and camping, and, when convenient, we all go.

Of the four older children each has a bicycle, the boys also having their own rifles, shotguns, fishing tackle, traps, etc. Some years they make considerable money hunting and trapping, besides enjoying the sport.

We keep our subscriptions paid up on several good farming papers, including ORCHARD and FARM. The children read these and get help therefrom.

We make it a point to set a good table, having variety and using plenty of cream, butter, etc., and none of them would exchange this sort of living for the paper-bag-system of the cities. They realize that we probably could not live this way were we in the city.

Wherever they go they still are of the opinion that there is no place like home. Therefore, although they all have considerable work to do, our method so far has been successful and we hope to raise them to be good farmers and farmers' wives, as well as good citizens.

We also often talk over the ranch affairs, such as improvements, stock, etc., with the children, thus increasing their interest.

MRS. W. A. ADAMS,
Clio, Plumas County, Cal.

Farm Foods for Health

A Chat With Mothers About Facts That Sometimes Are Overlooked

By Adele Merriam Delahay

[Editorial Note—Mrs. Delahay has had years of experience as a rural welfare worker. In collaboration with the U. S. D. A., Red Cross and other agencies. ORCHARD and FARM has made special arrangements with this gifted writer and adviser to contribute articles on subjects of special interest to farm mothers.]

MILLIONS of people think the war a cruel, bloody event—and it was—but out of the shadow of sorrow comes the sun of knowledge. The war proved that this country has been rearing too large a proportion of weaklings, hundreds of thousands of men from all parts of the land bearing testimony to the fact. Not the least of the items to be noticed is the fact that many thousands of them came from farms and rural districts.

"Oh," you say, "but the farm is a healthful place; do not city people go there for health?" Exactly so, but during and since the war I have been doing Red Cross health crusade work, examining thousands of children in the schools of both city and country, with doctors and dentists, *and in every case the children in rural schools rank lower in general health and present more cases of malnutrition than in the cities.*

In some schools we found great opposition to the health examinations, in many cases because the parents did not know just what such an examination would be. But in the long run we won out and that is why hundreds of children in the country today are having defects remedied and attending nutrition classes; why schools are buying standard scales for the monthly weighing and charting of the children. It is one of the blessings sprung from the war; a flower of knowledge plucked from a field of blood.

VALUE OF MILK

On every farm, in most rural homes, and in many of the city homes will be found a plenteous supply of milk. We have long known the value of milk as a food, but it is only of very recent years that we have learned to what extent milk contains all the health-giving qualities (vitamines) that cannot be found all together in any other single food. For this reason we advise the use of milk in the preparation and cooking of foods, as well as for drinking purposes.

It does not need to be used solely as a drink and should not be forced on one who does not like to drink it. It can be used in puddings, custards, ice cream and a dozen other different ways. In our nutrition classes we try to get each child to drink one quart of milk a day and so well have we preached the lesson of milk that thousands of children are each day bringing their bottle of milk from home to eat with their lunch at noon. It is unnecessary to add that where this is being done we are noting a rapid advance in the health and weight of the heretofore underweight members of the schools.

Many parents have become so enthused over the advance in health of their children that they are now trying the milk drinking, too, adults being advised to drink a pint each day.

MILK IN COOKING

There are cream sauces galore, of which milk is the foundation. There are creamed potatoes, creamed peas, carrots, beets, parsnips and any other vegetable the housewife chooses to cream. Such dishes are dainty, appetizing and very nutritious. There are

(Continued on Page 32)

Another Contest for Women Readers

SO successful have been the recent letter contests conducted by ORCHARD and FARM, that we have decided to launch another, offering attractive prizes to women readers only.

Here Are the Awards

First Prize	$10
Second Prize	5
Third Prize	3
Three Prizes of $2 Each	6
Four Prizes of $1 Each	4
Total	$28

This means that ten subscribers may receive cash awards. Why not be one of the lucky ones? Just a little time and thought are required, for it is necessary only to write a letter of not more than 500 words on the subject:

"HOW TO MAKE PIN MONEY"

That is the topic for this new contest, and it should suggest any number of helpful ideas. Each contestant is requested to submit one plan, either from her own experience, or as observed in the experience of others. Tell what you have done, or others have done to make a little "extra" money, and if you like, tell what has been done with this money. As many of the winning letters will be published as we can reproduce in available space.

Each contestant should discuss only one idea or plan. No letter may exceed 500 words. No entry will be considered that is postmarked later than June 20th. Write TODAY, addressing Isabel Sinclair, ORCHARD and FARM, 1111 South Broadway, Los Angeles, Calif. (In the event of a tie, full and equal prizes will be awarded each of the winning contestants.)

The First Lady of Our Land, Mrs. Warren G. Harding, in Uniform as Leader of the Girl Scouts—and "Laddie," the White House Airedale

The Effects of Color

PERHAPS few of us have stopped to analyze what effect color has upon us mentally. Color is to light what music is to sound, and the present day has so closely connected color with our occupations and enjoyments, that we should no longer neglect definite training of the color sense. Each color has its own characteristics which we should know. Yellow has been used more than any other color for decoration since the beginning of civilization. It is easy on the eye and has a pleasing, happy effect on the mind, and a room whose color scheme is soft yellows and tans invites the sunshine indoors, producing a bright, airy, pleasant effect.

The following are interesting examples of the effect of color: A physician, when asked to treat a case of neurasthenia, refused to accept the case unless the living apartment of the patient he redecorated in blue-green instead of the prevailing red. Red is exciting in its effect upon the senses, and green is restful and refreshing.

A contrasting example: A certain brand of scales of efficient make when put on the market, contrary to expectations, failed to find a demand. The advertising manager suggested changing the color from grey to a bright red. This was done and immediately the sales ran high, for the color answered the call for expression, pleasing to the color sense of the purchaser.

Caramel Sweet Potatoes

One-half dozen medium sized sweet potatoes, 1 cup brown sugar, 1 cup hot water, 1 tablespoon lemon juice or vinegar, 1 teaspoon cinnamon, 1 teaspoon salt.

Partially cook the unpeeled potatoes in boiling water, cool and peel. Slice ½ to 1-3 inch lengthwise of the potato. Put in layers in baking dish. Make a thin syrup of sugar, water, lemon juice and cinnamon, cooking for about ten minutes. Add butter and salt and pour over potatoes. Put in a moderate oven and bake until the potatoes are done and somewhat gummy. A few raisins may be added if desired. Marshmallows also may be placed over the top and slightly browned. More syrup may be added if necessary so that the potatoes when finished will not be dry.

Note—Compare these patterns, as to price and style, with those obtainable elsewhere!

PRETTY COSTUMES
Chosen by Isabel Sinclair

These costumes are simple and can be made readily by the home dressmaker from the instructions provided. Send 15 cents in silver or stamps for each pattern desired. Address Pattern Department, Orchard and Farm, 1111 South Broadway, Los Angeles. Give full name and address.

3829-3985—Lady's Costume

[illegible] 3829, cut in 6 sizes: 34, 36, 38, 40, [illegible] 44 inches bust measure. It requires [illegible] of 36-inch material. The skirt [illegible] cut in 7 sizes: 25, 27, 29, 31, 33, 35 [illegible] 37 inches waist measure. The skirt [illegible] require 3⅝ yards of 36-inch material. [illegible] width at the foot is about 2 yards. [illegible] separate patterns, 15 cents for each [illegible]

3988—Lady's Dress

[illegible] in 6 sizes: 34, 36, 38, 40, 42 and 44 [illegible] bust measure. A 38-inch size requires 4½ yards of 36-inch material. The [illegible] at the foot is about 2 yards. Price [illegible]

3991—Lady's Apron

[illegible] 4 sizes: Small, 34-36, medium, 38-[illegible] 42-44, extra large, 46-48 inches [illegible] measure. A medium size requires 2⅝ [illegible] 36 inch material. Price 15 cents.

4004—Misses' Dress

[illegible] sizes, 16, 18 and 20 years. A [illegible] size requires 4⅝ yards of 36-inch [illegible] The width at the foot with plaits [illegible] about 2¼ yards. Price 15 cents.

[illegible]6—Lady's House Dress

[illegible] 7 sizes: 34, 36, 38, 40, 42, 44 and [illegible] A 38-inch size requires [illegible] yards of 36-inch material. The [illegible] about 2 yards. Price [illegible]

[illegible]96—Girl's Dress

[illegible] and 12 years. A [illegible] 3½ yards of 32-inch [illegible]

[illegible] "Overalls"

[illegible] and 6 years. A 4-[illegible] 27 inch m[illegible]

3980—Child's Dress

Cut in 4 sizes: 1, 2, 3 and 5 years. A 3-year size will require 1½ yards of 36-inch material. Price 15 cents.

4000—Girl's Dress

Cut in 4 sizes: 8, 10, 12 and 14 years. A 12-year size requires 3½ yards of 36-inch material. Price 15 cents.

CATALOG NOTICE

Send 15 cents in silver or stamps for our up-to-date spring and summer, 1922, catalog, containing over 500 designs of ladies', misses' and children's patterns, a concise and comprehensive article on dressmaking; also "Some Points for the Needle," illustrating 30 of the various simple stitches. All valuable hints to the home dressmaker.

Use Coupons in Ordering Patterns

Herewith find..... .cents, for which send me the following patterns:

Pattern No.... .. ... Size .....

Pattern No..... ... .. . Size . ..

Pattern No. .. . . Size.. . .

Be sure to give number and size. Send orders for patterns to ORCHARD and FARM 1111 South Broadway, Los Angeles. Be sure to sign your name and address below.

Name . . . . . .

Address

Write numbers of additional patterns below)

—Knowing How

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GEORGE P. WELDON, Horticultual Editor of ORCHARD and FARM, has devoted his life to study and practical experience in fruit growing.

And he possesses unusual ability to convey his knowledge to others in an interesting, convincing way.

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ORCHARD and FARM subscribers, through this exclusive arrangement, not only receive the benefit of his monthly contributions, but also have the privilege of submitting questions upon any horticultural subject. These Mr. Weldon answers by mail *free of charge.*

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GRAPES

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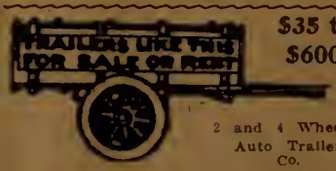

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BABY CHICKS every week. Barred Rocks, R. I. Reds, Black Minorcas, Brown and White Leghorns. Safe arrival and satisfaction guaranteed. Tobener Hatchery, Route 2, Box 306, San Jose, Cal.

S. C. WHITE LEGHORN Baby Chix from our own Bred-to-lay stock. Now booking for March to June delivery Model Poultry Farm, W. C. Smith, Prop., Corning Calif

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POULTRY

PROFITABLE POULTRY NEWS: Capacity 200,000 chicks, hence prices surprisingly low for quality. County Farm Advisors, County Agents, small, large ranchers, city people are yearly buying more of these 180-290 egg strain Leghorns, Rocks, Reds, Minorcas, Anconas, Wyandottes, Andalusians, Ducks, Turkeys. Customers say: "Saw some of your June-hatched Leghorn, Ancona pullets. They are grand." "Raised 96 per cent of 500 Leghorns, proved highly satisfactory" "Can you supply Wyandotts, Reds like those 1919? Nothing like them here." "My Reds laid 5 months, Leghorns 4½." "Recommending your turks because they averaged 20 lbs., 7 months, gobblers weighing 24 lbs." Sold 900 already to her friends. Specially low June, July prices. Booking fall delivery. Write Box O, Profitable Poultry, 13 North Fair Oaks, Pasadena.

WHITE LEGHORN Baby Chix for May and June delivery at $12.50 per 100; $115.00 per 1000, from flocks inspected and accredited by Sonoma County Farm Bureau. Safe arrival of full count, live, strong chix guaranteed.
THE PIONEER HATCHERY
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WATCH US GROW—Baby chicks. We are now booking orders for the season of 1922. Brown and White Leghorns, Rhode Island Reds, Barred Rocks and Anconas. Safe arrival and satisfaction guaranteed. E. W. Ohlen, Campbell, Calif.

BARRED PLYMOUTH ROCKS—"Nothing better in poultry." Wonderful layers. Hens and pullets for sale. Also choice cockerels that will improve your flock. Now booking orders. Have made a specialty of Barred Rocks for over twenty years; "that's why" our birds win at all leading shows. Catalog free. Vodden's Hatchery, Los Gatos, Cal.

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for fall delivery—thousands of dollars worth sold already.

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PURE BRED GIANT BRONZE, Goldbank, Copper King V strains. Flocks headed by four famous Madison Square Garden winners, including Goldbank VIII, Goldbank Boy, Goldbank King and Copper King's Boy. Bred to 20-lb. hens. Eggs in season. Bronze King Farm, Route 2, Box 88-A, Merced, California.

BRONZE TURKEY EGGS, ¾ Giant, 35c. White Muscovy, Rouen, Fawn, White Indian Runner, Pekin Duck eggs, $1.50 dozen. Large beautiful light Brahmas, eggs $2 setting. Mokelumne Poultry Ranch, Lockeford, Cal.

BRONZE turkey eggs, also herding Collie dogs. 45,000 acre range. San Miguel, Cal. Good opportunity for turkey raisers with small capital. John G Mee

R TURKEN TURKEY CHICKEN. rdlest 200 eggs. Turkey meat. Photo. let free. Spencer, 9 Case St., Santa , Cal

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ELL'S White Muscovy (quackless) ks, win, weigh, lay and pay. Eggs gs free circular Caldwell Duck x 274, Los Angeles, Cal.

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Marketing Fruit

(Continued From Page 23)

the name, "pear" in this State has almost come to mean "Bartlett."

During the marketing season in Sacramento, the California Fruit Building, which is 10 stories high, has the appearance of a roadhouse, built after the style of an office building, for it is a shaft of light each night. The fruit marketing offices run on 18-hour shifts. The general manager gets down to his job with the milk man and buys the midnight edition before he goes home. His is a seasonal job with a vengeance, and while the normal mortal is away on a camping trip, or at the seashore, the fruit man has his sleeves rolled up and, with a half dozen stenographers about him, is struggling to clear his desk of its telegraphic litter.

But the worst has not yet arrived for him, for the field men begin to drop in with news that grapes have now reached 117 per cent sugar and are beginning to enter the packing houses. The grapes dribble in at first and then they drop upon him in hundreds of carloads. The season gets well under way as August nears the meridian and continues its mad rush through September and October. It seems that as long as the frost and rain keep away, there are grapes to be had. I can well remember one particularly favorable season when grapes kept moving until nearly Christmas.

"Table" is a word used for politeness or policy in the grape season. California ships "table" varieties and dries "raisin" varieties. Formerly there were "wine" varieties, too. The Volstead Act has turned "wine" grapes into shipping grapes, a distinction formerly enjoyed only by "table" varieties.

With prohibition foreshadowing, we wept salty tears for the sad fate of the "wine" grape man; today he passes us in his limousine. The fact is that in the last three years, California's shipments of fresh grapes have doubled and more. Virtually half of the total shipments of fresh fruits from this State for 1922 consisted of grapes, and thousands of carloads of these were sent out in "lug" boxes, destined for householders who know how to "make their own."

Thus the grape season has brought new problems to the well-ordered family of fruit shippers. The crop is now in the "bonanza" stage and means easy money for everyone connected with it. The result is that a large number of itinerant brokers have entered the field and are in competition with the regular established fruit companies which formerly handled the crop.

These brokers apparently have been able to do little damage to the well-regulated marketing machinery for the reason that the demand for grapes exceeds the supply.

At Lodi one day during the last season I was with a big grape grower when he received a wire from his representative in the East quoting a price on a car already forwarded.

"I don't like the price; guess I'll see what I can get for it here," he remarked.

He walked down the street and came upon a man whose office was in his coat pocket. This man was an itinerant broker. He bought the car, for he had a customer who wanted it.

Toward the end of the grape season, the scramble for fruit to supply the demand became frantic. Late in October I saw a wire asking for 30 carloads of grape "strippings" and offering $70 a ton. Before the Volstead days, these strippings were largely waste. (Strippings are cull grapes, discarded from the regular pack of table varieties.)

The present chaotic condition of grape marketing is regarded by conservative fruit men, however, as only a phase of the times. They do not view it with alarm and believe that everything will work out right later.

Deciduous fruit marketing comes to an end in California with the approach of the holidays. The first frost stops grape shipments, and eastern markets then must fall back upon cold storage pears, sawdust packed grapes and apples, which, while produced abundantly in California, are not marketed through the big deciduous agencies.

As the season closes, the California Fruit Building in Sacramento takes on a somber appearance of evenings. The fruit marketing man again gets acquainted with his family, spends his days figuring out how much money was lost or made, calculating income tax statement and jollying the growers, getting an estimate of the "shook" needs of next season, etc. After the first of the year he starts East to "call on the trade" and takes in the Fruit Jobbers' Convention on the way. Home again, he goes afield, watches the buds swell, lies awake at nights for fear of frost in blossoming season, keeps an eye on Georgia's peach crop, is hardly able to suppress a smile when he hears of a bad storm there and, in general, gets his body and mind in "apple-pie" order for the coming of April and cherries.

We still hear talk of "over-production," but as long as fruit is marketed as efficiently as it is today in California, I think that fear is groundless. As a matter of fact, although census figures show greater bearing acreages of deciduous fruits on the Pacific Coast, there is but little increase for the United States as a whole. The fruit industry, like Horace Greeley's wise young man, is moving West.

Six Horse Hitch

This diagram, prepared by the Horse Association of America, illustrates an efficient six-animal hitch for use with plow and disc-harrow.

Rhodes Grass in California and Arizona

Rhodes grass will succeed on land too alkaline for alfalfa and also on some of the less alkaline but clayey hard soils of the Southwest. After Rhodes grass is grown on such soils for several years, they usually are in much better physical condition and more favorable to alfalfa and other common crops. Securing a stand of this grass on heavy, clayey, alkali land has been one of the greatest difficulties. On loam or sandy loam soil success usually can be attained by sowing broadcast in a well-prepared and firm seed bed, covering very lightly, and keeping the surface moist and by frequent irrigation by flooding until the seed has germinated. Broadcasting is advised, as most seed drills are apt to plant the seed too deep, and as the seed is very light a calm day should be selected for seeding. On heavier and poorer soil the flooding method of irrigation is not successful. Under such conditions favorable results have been secured by following the corrugation method. After the seed has been sown the field should be furrowed for irrigation, making small furrows about two feet apart. This will permit of irrigation without flooding and hardening the surface, thus making conditions more favorable for the germination of the seed. The device used for furrowing field is known as a corrugator, the essential part of which is a long plank or frame to which is fastened below at 2 foot intervals sled-runner-like projections or narrow shovels for making the furrows. In irrigating by this method, as in the case of flooding, it is essential to keep the suface of the soil moist until the seed has germinated. The best time for seeding is in the spring. The seed does not germinate well in cold weather, and poor stands often result from too early seeding.

Irrigation Increases Walnut Crop

In 1919, one of every eight California farms grew walnuts and the trees which were irrigated produced over 11½ per cent more per acre than the unirrigated trees, according to the University of California College of Agriculture. The great value of supplying irrigation water, especially in years when the rainy season is late, has been thoroughly demonstrated in tests carried on by the State College of Agriculture in cooperation with the Walnut Growers' Association. A new correspondence course on Walnut Culture given by the College of Agriculture includes a lesson on irrigation of walnuts. A detailed description of the course may be found in Circular 113 which can be obtained on request from University of California College of Agriculture, Berkeley, California.

Helpful—"I find ORCHARD and FARM a very helpful magazine."—Chas. W. Randell, Santa Monica, Calif.

Efficiency in Vineyard Planting

SIMPLIFYING the task of planting a large acreage of new vineyards, The Fontana Farms Company, San Bernardino County, has employed a most efficient and successful system.

Since early in the spring, a crew of more than 50 planters has been in the field setting out nearly one million cuttings, over an area of 2000 acres. A crew, as employed at this work, consists of 20 men, comprising two "chain men," 16 planters and two men to distribute cuttings.

The "chain" is in reality a wire, 640 feet long, marked at intervals of 9½ feet. The field is marked off by means of stakes placed 9½ feet apart, each stake bearing a symbol which indicates the variety of grape to be planted in that particular row.

The "chain" men stretch the wire between stakes, and the planters, each carrying a small steel bar, place the cuttings. A hole is made with the bar to a depth of 14 inches, the cutting inserted (leaving a bud or two above the ground), the soil packed with the bar, and the surface stamped with the foot. The crew plants a 640-foot row in about five minutes.

In a few short years the Fontana district has become one of the greatest grape sections of Southern California, the sandy loam soil being apparently ideal for the production of grapes, and the irrigating system being ample to cover the acreage. The total vineyard planting in San Bernardino County now is about 18,000 acres, or more than the total acreage of all other counties south of Tehachepi, according to a recent survey.

More than 250 miles of concrete pipe have been laid in the Fontana district and it is believed the total production will be greatly increased as a result of bringing under irrigation a large acreage formerly producing without water.

The great vineyards now are being subdivided into 10 and 20 acre tracts, more than $200,000 worth having passed into the hands of investors and "small" ranchers since the first of the year.

The varieties planted include Muscat, Sultana, Zinfandel, Mission, Tereusa, Alicante Bouschet and Cornichon, the Muscats comprising about 30 per cent of the total.

A Scene in the San Bernardino Vineyard District

Southern California is planting thousands of acres of grapes, of which San Bernardino County claims the largest area. The large illustration shows one-year-old vines on the property of the Fontana Farms Co. The man at the left is engaged in planting cuttings by the "chain and bar" method, described in above article.

Partnership With the Bee

By W. B. Dickenson

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Article VI—Extracted Honey

FROM a purely commercial point of view, the profit which may be derived from beekeeping when the production of extracted honey is followed, as a rule exceeds that of any other method.

About 60 years ago, Major Von Hruschka, an Austrian living in Venice, devised a machine known as the honey extractor which "throws" by centrifugal force, the honey from the cells, by revolving the combs; they are then returned to the bees for refilling.

All previous processes destroyed the combs, leaving the beekeepers only the wax from which they were built, which probably did not equal in value, the honey used by the bees in its secretion. The exact amount of honey consumed by bees to produce a pound of wax has never been determined; it certainly varies with the temperature, but the old estimates of 15 to 20 pounds are very much too high. Comb is built by the bees at the cost of much time and labor and it is in the saving of this that lies the real economy of the extractor.

MUST CROWD COLONIES

As in the case of comb honey, to secure success, colonies must be crowded with bees at the commencement of the main honey flow. Colonies of medium strength will gather some surplus, but it is only those which are strong in numbers that can be expected to store profitable crops.

To secure the necessary number of "harvest hands" the same method of management should be followed as in comb honey production, with the exception that the second story must not be removed and extra room must be given as required, in the shape of supers containing frames of worked-out comb from which the honey has been extracted if possible. But as some beekeepers have not these on hand, and certainly beginners have not, each frame given must contain a full sheet of foundation, wired in. These soon will be built up by the bees into perfect combs.

No honey must be removed from the hive until it is ripe; that is, capped over by the bees. Bees rarely cap unripe honey. By capping is meant the thin layer of wax by which bees seal the cells containing honey.

New honey is very thin and often contains 60 per cent of water. If extracted at this stage it ferments and sours very quickly; in fact, is valueless.

The process of ripening, which usually takes about a week, the length of time varying with the humidity of the atmosphere and the temperature, is accomplished by the bees directing a current of air across the face of the combs day and night, driving off the surplus moisture. This is carried out by a system of fanners stationed not only at the entrance but throughout the interior of the hive. However much the size of their home may be increased by the addition of supers, it is ventilated as thoroughly as the most scientifically managed mine with its up-cast and down-cast shafts. This is one of the many amazing accomplishments of bees.

Farm Foods

(Continued From Page 28)

dozens of recipes that will at once suggest themselves to the cook, in which milk can be used, not the least of these being the dainty cream soup.

You see, we are all human, and the things that are easiest to obtain are the very things we care nothing about; thus where milk is plentiful, frequently we have little or no desire for it.

It has been the writer's pleasure to be the guest of many farm homes in the past few years while doing 4-H club and health work, specializing in rural territory; and when I am enjoying the wonderfully creamy milk—of course no one ever gives a health worker skimmed milk—I have often had members of that family envy me my ability to drink and enjoy it.

Many times have I stayed, donned an apron and gone into the kitchen to show the mother how to prepare foods containing milk for the tots of the family, and have often converted families to its greater use through dainty dishes that were not only delicious but also inexpensive, because there were plenty of butter, eggs and sometimes fruits, to go with the milk to be introduced to the family in a new toothsome concoction.

One thing I have noticed in farm homes: I have eaten the most delicious cakes and pies, but I have very seldom come across a nutritious custard of eggs and milk, one of which is a meal in itself so far as food value goes, one custard containing two eggs being equal in value to a whole pound of meat.

It is so easy to make them, too, just by whipping up eggs and milk together, that I shall give a recipe for egg custard which is both simple and easy.

RECIPE FOR CUSTARD

Heat two cups of milk, but do not boil; beat three eggs well and add five tablespoons of sugar and two of water and stir rapidly into the heated milk. Turn into custard cups, sprinkle nutmeg on top, and place cups in a pan or dish, surrounding them with an inch and a half of water and place in the oven until thoroughly set.

Both grown-ups and children will enjoy these dainties.

Grading Barley

By V. C. Bryant

SECRETARY, CALIFORNIA FARM BUREAU FEDERATION

THE California Farm Bureau Exchange recently has organized a Grain Department which is planning to handle 50 per cent of this year's crops and all subsequent crops. One of the outstanding features to be established by the Exchange this year is the selling of California barley "on grade." Very few farmers realize that California produces a very superior quality of malting barley. The only competitor California has in the production of malting barley is Manchuria and the two-row barley which is produced in parts of Scotland. Maltsters are very desirous of securing a barley which contains a high percentage of sugar, and that has become thoroughly ripe before cutting, which gives it an even and uniform germination.

V. C. Bryant

As California barley stands in the field for some time after it is ripe, this produces the two qualities particularly sought after by maltsters and they are willing to pay a considerable premium for California barley because it fulfills these requirements. All the barley handled by the California Farm

(Continued on Page 34)

BOYS AND GIRLS Their Work and Play

Here Are the Prize Winners

So many delightful stories about animals were submitted by our boys and girls that the judges found it very difficult to choose the winners. But after considering all points—age, originality, neatness, school grade and interest—they chose the following to receive the cash prizes:

First Prize, $3.00.....Lowell R. Williams, Selma, Cal.
Second Prize, $2.00.....Vera Melvina Lewis, Sumas, Wash.
Third Prize, $1.00.....Richard Wileman, San Gabriel, Cal.
Fourth, fifth, sixth and seventh, 50 cents each, in the following order:

Cecelia Davy, Ojai, Cal., "The Story of Penelope, a Cow."
Edna Szukai, Eugene, Ore., "The Tale of a Billy Goat."
Roy Brown, Lodi, Cal., "The Adventures of a Mouse."
Marion A. Davy, Ojai, Cal., "Sonny, a Yellow Dog."

Unfortunately we have not sufficient space to publish more than the first three stories. But among the scores submitted many more deserve special mention. The judges recommend "HONORABLE MENTION" of the following writers:

Lois Fiscus, Sebastopol, Cal., Kathleen [illegible]rgis, Pleasanton, Cal., Camilla Regina [illegible]ch, Brentwood, Cal., Ellen Westerberry, [illegible]rt Bragg, Cal., Louise Vucovich, Hanford, [illegible]l., Hazel Dowell, Laton, Cal., Reino Thors[illegible]m, Fort Bragg, Cal., Emma Linde, Lodi, [illegible], Minnie Baracchi, Redwood City, Cal., Gertrude Adams, Cllo, Cal., Wilbur Brown, Lodi, Cal., Marie Adams, Cllo, Cal., Faith Russell, Shafter, Cal., Angie M. H. Taylor, Gardena, Cal., Esther Stevens, Nooksack, Wash., Geraldine Bonestill, Hanford, Cal., Waldo Stevens, Vernalis, Cal., Lula Kate Lamb, Fate, Tex., Lois Adams, Fresno, Cal., Vera Mazelle Bryan, Fate, Tex.

First Prize Story

Dempsey's Autobiography

THE first time I opened my eyes it was to stare at a struggling mass, which I afterward learned was my six little fat brothers and one little dumpy sister.

I was the poorest of the lot but I soon learned how to knock out the whole bunch until I got more than my share of Mother's food. I ate so much that it made me bowlegged to carry it and that, I think, is the reason why so many people preferred to be masters to my little chums. The fact is, I think they didn't know a good pup when they saw one.

Anyway, I know I couldn't ever have been so happy if Master Lowell Williams hadn't fallen in love with my fighting qualities and taken me because he thought me such a spunky wretch.

Before my master gave me to my new friend he took a razor and a hammer and cut our tails short. Oh, how it did hurt! I heard the boy that was to be my new master saying some awful things that ought to be done to that man for being so cruel. Now you ought to know why I wagged my piece of tail so happily when Lowell said, "This little white fellow is mine."

When he took me home I found all my new friends most loving. In fact, there was almost a battle among the different members of my master's family because all of them wanted to hold me and pet me at the same time.

They fed me so much that I became very sick. Then my master's kind old mother would allow me fed nothing but food that was good for my little tummy. The result was that I—the little fighting, bowlegged Dempsey, became so fat and white, so beautiful and loving that the owners of my brothers and sister were sorry they had not made their choice.

When quite small and weak I used to bark fiercely at any suspicious looking hobos. How they would laugh at my efforts to protect our home! But when I became larger they didn't [illegible] so close!

I am a great big fat fellow now, but something is making me feel so bad. My friends are all petting and [illegible] more all the time. I'm growing weaker and so weak. They are all [illegible] to me. How I do love to creep [illegible] them and lay my poor aching [illegible] their laps. How the little [illegible] over me and how my dear [illegible] say, "Poor, poor Dempsey!" [illegible] why.

[illegible] as I lie on my nice little bed [illegible] that I will never see my dear [illegible]. Now I must try to get [illegible] I just creep to the door [illegible] I can. How cold [illegible] I am——

[illegible] WILLIAMS,
[illegible], Selma, Calif.

Second Prize Story

The Story of "Jip"

WHEN I was very young, I was given to a man who said he wanted me for a playmate for his baby boy.

When we reached home I was very glad to see my new mistress was a pleasant, jolly, little woman and the baby a dear little boy of about one year, just beginning to walk.

I thought how fortunate I was to have such a comfortable home.

Little Ralph and I grew to love each other, very, very much. Wherever he went I went too. I would let no harm come to him.

There was a creek a little way from the house; a path led to it from the kitchen door. Here Ralph's Mother got the water she used for the house.

As Ralph grew older he played out of doors; sometimes he went to the creek with his mother when she went for water.

When Ralph was about two and a half years old he started down the path toward the creek. I felt worried and walked in front of him, but he kept walking around me, first one side, then the other. At last we reached the creek. Ralph walked too close to the bank and fell in. I jumped in after him, but try as hard as I could, I couldn't get him out, as I wasn't very large.

First I brought his hat out; then I pulled and pulled on one little foot until the shoe came off. I put the shoe on the bank by his hat. I knew I couldn't drag the little fellow out. I ran up the path as hard as I could; the kitchen door was open. Ralph's Mother was washing. I rushed up to her and barked, then started down the path again, but Oh, she wasn't coming!

I ran back, caught her skirt in my teeth and pulled towards the door. She said, "Well Jip, I'll go with you." I let go and ran down the path barking. Of course she couldn't go as fast as I so I would run back and bark every little way. Finally we reached the bank where the hat and little shoe lay. Way out in the water we could see little Ralph's dress.

His mother screamed and jumped in and got him. The scream of his mother brought some of the neighbors. They worked three hours with the little fellow; it seemed ages to me.

Then Ralph's mother came and patted me on the head and said, "God bless you, dear Jip, you have saved my darling boy." To show my joy I barked and wagged my tail.

I heard my master say shortly after, "No sir, there isn't enough money in

(Continued on Page 34)

"People Who Live in Glass Houses"

A former Kansas cattleman, now a prosperous producer in Oregon, has nine of them—but has never thrown stones. His remarkable story will be told by O. H. Barnhill in an early number of ORCHARD and FARM.

Last year, when most tillers of the soil were grumbling about low prices and lack of demand, the owner of the glass houses increased his sales 25 per cent—from $24,000 to $30,000.

Read how he did it and why—in Mr. Barnhill's best and most entertaining style. Coming soon!

A Confession

By O. H. Barnhill

I'D rather sing a little song—
Not too short and not too long—
And have it read by folks I know,
Who daily greet me here below,
Than pen a bulky five-pound book
For those on whom I never look,
And have my name in journals great
That circulate in every State.

GIVE me the touch of friendly hands;
I crave no fame in other lands.
An ounce of praise at my own doors
Is worth a ton from foreign shores!
If I can see I'm striking oil
In hearts of those with whom I toil,
I'm satisfied to eat my bread
In thankful joy for what I've said.

MY MESSAGES are never hurled
Across the wide and watery world.
I love the folks I've never seen,
Yet never turn with envy green
For their applause and praises big.
I'd rather be a little pig
And have my back scratched every day
By those with whom I work and play.

A Writer With True Human Touch

O. H. Barnhill

Mr. Barnhill, whose real stories of real people have endeared him to thousands of ORCHARD and FARM readers, is "back again" with one of his best articles.

This is just one of the many big features scheduled for early publication.

Send Your Renewal Order Well in Advance of Expiration Date

Don't Miss a Single Issue

The New BULLETINS

AMONG the new free Government bulletins and those especially interesting during the month of June, the following deserve special mention. Address Division of Publications, U. S. D. A., Washington, D. C. Order by number:

	FARMERS' BULLETIN
Mosquito Remedies and Preventives	444
Harvesting Hay With Sweep Rakes	838
Making Butter on the Farm	876
Evaporation and Drying of Fruits	903
Haymaking	943
Curing Hay on Trucks	956
Control of European Foul Brood	975
Potato Leafhopper and Its Control	1225
The Chinch Bug and its Control	1223
The Border Method of Irrigation	1243
Insect Enemies of the Avocado	1261
Stored Grain Pests	1260
Development of Wilt-resistant Tomatoes	1015
Game as a National Resource	1049
Sterility of Oats	1058
Seed Peas for the Canner	1253
Meade Cotton, An Upland Long-Staple Variety	1030
Home Canning of Fruits and Vegetables	1211
How to Control and Reclaim Gullies	1234
The Sugar Beet Nematode	1248
Olive Growing	1249
Production of Peas for Canning	1255
The Boll Weevil Problem	1262
Preparation of Peaches for Market	1266
A New Feature in Bud Variation in Citrus	Circular 206
The Mole as a Pest, and Fur Producer	1247
Feeding Grain Sorghums to Livestock	724
Information for Beginners in Irrigation	864
The Care of Leather	1183
Trees for Town and City Streets	1208
Screw Worms and Other Maggots	857

The University of California also has issued a number of new and helpful publications, sent free upon request. Address, Director, Agricultural Experiment Station, Berkeley.

	CIRCULAR
Harvesting and Handling California Cherries	232
Artificial Incubation	233
Winter Injury to Young Walnut Trees	234
Soil Analysis and Soil and Plant Interrelations	235

The State Department of Agriculture, Sacramento, in addition to its regular monthly bulletin, which is sent free upon request to those interested, has issued the following free publications:

Weeds of California and Methods of Control.
Statistical Report of Dairy Products, 1920-1921.
Cherry Fruit Sawfly and Its Control.
Report of the Viticultural Service.
Report of the Department, 1921.
Report of 54th Convention of Fruit Growers and Farmers.
Growing and Shipping California Lettuce.
The Maribou; a Menace to Cattle Ranges.

The University of Arizona, Tucson, has issued the following publications:

	BULLETIN
The Olive in Arizona	94
Butter Making on the Arizona Farm	137
Treatment of Seed Potatoes for Scab and Black Scurf	136
The Colorado River and Arizona's Interest in Its Development	95

The Agricultural Experiment Station, Iowa College of Agriculture, Ames, Ia., has issued a new circular (No. 76) on "Hubam" clover.

The National Lime Association, Washington, D. C., furnishes free a Bulletin (No. 176), "Uses of Lime on the Farm."

BOOK REVIEW

"Cyclopedia of Farm Animals," L. H. Bailey. Illustrated. The McMillan Company, Publishers, New York.

This is one of the most comprehensive works on Animal Husbandry ever published. It includes the information contained in Dr. Bailey's general agricultural encyclopedia, with additional data and illustrations, making it a complete book, covering all phases of the livestock industry, including poultry.

ANNOUNCEMENT

A feature article on the olive industry of California, together with information about new marketing plans of the olive growers has been prepared for ORCHARD and FARM by J. J. Hoey, Secretary of the California Olive Association. Owing to lack of space this month, the article will be published in the July number. It's well worth waiting for!

Growers Warned Concerning Sulphur Grades

[ORCHARD and FARM is just in receipt of a letter from P. M. Paulson, of San Francisco, who has been for some years prominently identified with the sulphur industry, pointing out important facts concerning sulphur grades and prices, and warning farmers and fruit-growers against the practice of mixing sulphur with a "carrier." Extracts from Mr. Paulson's letter are given below.—Editor]

"SULPHUR is a good deal like most other commodities, inasmuch as there are many different kinds and grades. You are familiar with the many different grades of fruit and know that even in varieties there is a wide variation in quality and valuation.

"If sulphur were just sulphur, or fruit were just fruit, and so on down the line, business would indeed be on a very plain and simple basis. The only trouble would be that the consumer might go into a store on one occasion and buy a lug of fancy Emperor grapes, and on the next occasion he might buy a lug of small sized mildewed or mealy-bugged cull Zinfandels and pay the same price on both occasions.

"The same is true of sulphur; the consumer may buy a sack of Sublimed Velvet Flowers of Sulphur on one occasion, and at another time a sack of crude dusting sulphur.

"When sulphur is dusted on vines or trees, it is the amount of sulphur surface exposed to the action of the sun that counts. The greater the exposed surface, the greater the proportion of fumes given off. With a ground sulphur, regardless of the fineness, only the outside surfaces of the particles are exposed, whereas with the sublimed flower of sulphur there are many inner recesses and surfaces exposed, in addition to the outside surfaces of the particles. In addition sublimed flowers of sulphur very readily form small amounts of sulphuric acid when dusted on to the vines, and this acid is of great benefit in immediately checking fungous growths.

"Under no circumstances would we add any adulterating material to sublimed flowers of sulphur. To coat the sulphur particles with an inert material, is to defeat the very purpose of its use. A lime or kaolin coating prevents the sun's rays from acting on the sulphur particles, and naturally cuts down the amount of gas produced. Besides, lime has exactly the opposite properties to sulphuric acid and would neutralize the acid formed from the sulphur."

Accredited Herds in California

(Continued From Page 21)

vored with almost a year round supply of green feed.

California is the logical point from which to draw supplies of cattle for South America, Mexico, the Orient, Alaska and the Hawaiian Islands, as well as adjoining States. Only recently a representative of the Mexican Government came to this State to buy several large consignments of cattle.

As conditions become more settled in Mexico it may become one of our best livestock customers, agricultural pursuits having been neglected there for a number of years. Likewise, South American representatives have been casting about for good cattle in California.

The Hawaiian Islands will always be a natural customer if our breeders are able to furnish the needs of that territory, and as all States and foreign countries now demand a guarantee that the cattle they receive are free from tuberculosis, this requirement can best be met by having accredited herds from which to draw the supply. —Dr. J. P. Iverson, Chief, Division of Animal Industry, California Department of Agriculture.

Grading California Barley

(Continued From Page 32)

Bureau Exchange this year will be cleaned and graded. All shipments will be sold on sample which are given a grade. This will tend to establish a Western grade in the European and world markets, which will ultimately become so well established that it will not be necessary to submit samples. These grades will demand a premium according to their quality, and will not go on the market as ordinary feed barley, which has been largely the case in the past.

LOW COST SELLING

The California Farm Bureau Exchange has made arrangements with Wills & Son of London, England, to represent them on the European market. Wills & Son are to receive one per cent commission and they guarantee all bills. This will give the California farmers all the money which their better quality of barley brings, minus the actual handling charges. The California Farm Bureau Exchange will handle this at a cost not to exceed $1 per ton.

In order for the California Farm Bureau Exchange to control the market in this State and secure for the farmers the price which their barley is capable of bringing, they must have signed up at least half of the barley crop to be handled through the Exchange. Therefore, every grain grower who is interested in securing the maximum returns from his grain should immediately get in touch with his County Farm Bureau and arrange to market his grain through the California Farm Bureau Exchange.

Boys and Girls' Stories

(Continued From Page 33)

the world to buy that little dog." My joy was complete.

VERA MELVINA LOOMIS,
R. F. D. 1, Sumas, Washington.

Third Prize

A Night of Terror

I AM only a little white rabbit but I have had a terrible experience already in my young life. I was born on Friday the thirteenth, a lucky day for me, but very unlucky for my little brothers and sisters, and I know you will think so too, when I tell you all about what happened.

I was very happy with my mamma and my five little brothers and sisters. We were in one side of a double hutch and could run through the wire to the other side and be with our father. And oh, the fun we did have.

Now, my little master, Richard, has a fine hunting dog that he is very proud of but he does not pet him any more, for the other night when we were all eating our hay, here came that great, big dog jumping and tearing at our home.

We did not feel so frightened at first, for we did not think he could get us when we hid in the hay, but he is so big and strong, he tore the boards off with his teeth and soon caught my mamma and papa. We little ones fell out and all ran away and hid, but he found them all but me. Oh, I was so frightened. But now I am not afraid, for my master has found me and tells me I am safe.

RICHARD WILEMAN,
San Gabriel, Cal.

Sunflowers

BELLIGERENT YOUTH

REGINALD'S a scropper—of that there is no doubt!
He scropped his father's auto the first time he went out.
At every social gathering he's right there with the punch,
And he can kill more time than any person in the bunch!

HE did not fight the Germans—but he fought against the draft.
He's smashed all the conventions, then lightly, he has laughed!
Ah, peaceful folk breathe easier when Reginald decamps.
Why, I believe that he could lick his weight in postage stamps!

—Justin Nutt.

OR AT LEAST A DENT!

Johnny—"This certainly ought to make a good impression on our visitors!"

Didn't Notice the Mold!

A thrifty woman ate a nickel's worth of left-over food "to save it." Her doctor bill was $50.

Slipped One Over

Casey—"Ye're a har-rd worruker, Dooley. How many hods o' morther have yez carried up that ladther th' day?"

Dooley—"Whist, man, I'm foolin' th' boss. I've carried this same hodful up an' down all day, an' he thinks I'm worrukin'!"—Cleveland Leader.

But How About the Hops?

"This nematode pest is becoming very serious, isn't it?"

"Oh, I'm not worrying! Don't I know all toads are harmless?"

The Hardening Process

Prison Personnel Officer (assigning new customer to job)—What are you in for?

Late Arrival—Forgery.

P. P. O.—Report to the blacksmith shop and they'll put you to work.—Judge.

New Olive Association

AT a meeting of the Associated Chambers of Commerce of the San Fernando Valley, held at Burbank on Tuesday evening, May 16, a resolution was unanimously adopted indorsing the movement recently inaugurated at Fresno to organize the olive growers of California into a co-operation marketing association similar to that of the raisin, peach and fig growers. Frank D. Lewis of Pacoima, well known olive grower, has been named as one of the 25 trustees who will form the governing body of the new association, which will be known as the "California Olive Growers."—J. J. Hoey.

"We are essentially in the egg business and it is to our advantage that the White Leghorn eats about half as much as a Plymouth Rock or Rhode Island and produces a broiler that is in great demand," says Bert Kay, in this number of ORCHARD and FARM.

Bert Kay is first of all a practical producer. Because of this he is able, more than many of the foremost poultry theorists, to assume naturally the producer's attitude. Theories are interesting because they provide the stimulus for increased production, yet more potent than theories is the wisdom gained by experience.

Bert Kay owns and successfully operates a 4000 hen ranch at Petaluma. Any successful man is worth reading and listening to. He talks to you each month in a free, conversational style not only of the problems that he has met, but those you are meeting every day.

While reading his engaging articles you can't help but recognize those qualities that have made him an able, practical poultryman.

Whether you keep chickens in your back yard or raise poultry commercially, you can use Bert Kay's practical poultry pointers.

How Layne & Bowler Pumps

Are Paying Dividends to Actual Users

One Irrigator Increases Production 250%

"Last year I drilled a well and installed a Layne & Bowler Pump and gave my orchard three good irrigations. The result has been that my crop is fully 2½ times as large as the previous year's crop and all perfect fruit. The pump furnishes more water than I need and I am making quite an extra profit selling water to neighbors"—writes A. A. SCHOENHEIT of San Jose, Calif.

No More Excessive Upkeep Ditch Charges

"We prefer pumping with Layne & Bowler Pumps than using ditch systems, as the cost is low. We can apply the water when needed; also the water is clean, no danger of infestation from Johnson grass or weeds"—writes W. C. MOSS, Supt. of the Bullard & Miles Ranch, Madera, Calif.

Replaces Dangerous Pit Pumps

"Previous to 1916 we were using pit pumps, but that year we installed a 12-inch Layne & Bowler. Its operation being so satisfactory, we discarded two other pit pumps, installing two more L. & B.'s"—writes W. TODD DOFFLEMAYER of Exeter, Calif.

Pump Pays for Itself by Increasing Production

"Previous to 1917 we were dependent upon ditch water, which usually gave out in July. In July, 1917, we installed a 12-inch Layne & Bowler Pump and in 1918 another L. & B. These two enable us to irrigate 6 times after the ditch water gives out. The increased crop production paid for the first pump the year it was installed and both pumps have paid for themselves several times over," declares MITCHELL CLARK of Reedley, Calif.

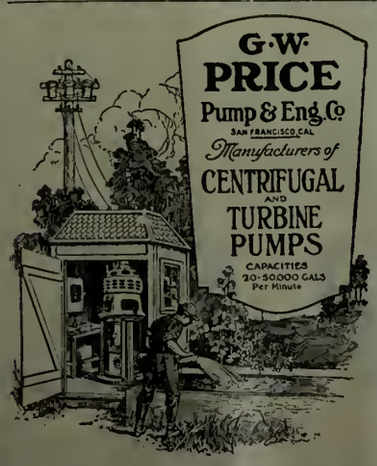
The above cited experiences of four successful ranchers reveal the high esteem in which Layne & Bowler Pumps are held. In a few weeks the dry season will be at its peak. Order your pump *now*—and be prepared.

Get in touch with

"The World's Largest Water Developers"

Layne & Bowler Corporation

900 Santa Fe Ave. **Los Angeles**



Write for circular and name and address of our nearest agent.
33 Stevenson St.,
San Francisco, Cal.

Modern Irrigation Methods

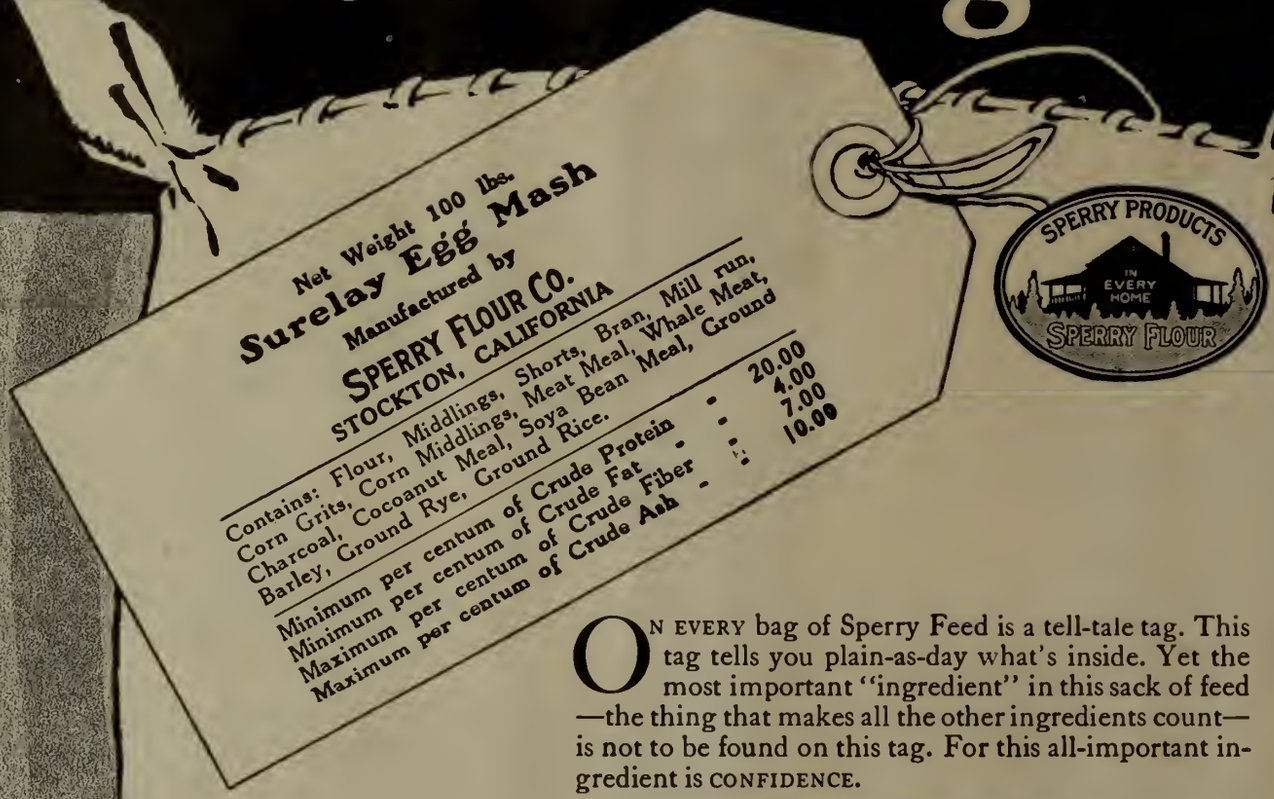
Our experts will be pleased to furnish estimates and suggestions as to the installation of irrigation systems for any character of land.

We are prepared to furnish you names of manufacturers of concrete pipe in your vicinity equipped to manufacture pipe of the proper quality at a fair price.

Martin Iron Works

1238 East 28th St. Los Angeles, Cal.

"what's *on* the tag is *in* the bag"



On every bag of Sperry Feed is a tell-tale tag. This tag tells you plain-as-day what's inside. Yet the most important "ingredient" in this sack of feed —the thing that makes all the other ingredients count— is not to be found on this tag. For this all-important ingredient is CONFIDENCE.

—confidence in our practical, hard-pan knowledge of poultry problems.
—confidence in the Sperry formula and the seasoned experience back of it.
—confidence in our daily laboratory tests that make each batch of feed measure up in net feeding value.
—confidence in our ability to produce, at the lowest manufacturing cost, a prime quality feed that does what it's made to do.

You can never go wrong on SURELAY because we make it our business to see that everything goes right in the blending. We take guess-work out of your feeding by keeping it out of the feed.

SURELAY is always the same—always uniform. That's why you should always specify SURELAY in the yellow-striped bag when ordering from your dealer. Then you'll never be in doubt as to how the feed will turn out; for "what's *on* the tag is *in* the bag"—always!

The new edition of our guide-book to poultry profits —"Makes Hens Happy"—tells why Sperry Feeds mean more eggs and more dollars to every poultryman. Send for it today—mail the coupon now!

SURELAY

"A Sperry Product"

ORCHARD and FARM

JULY, 1922

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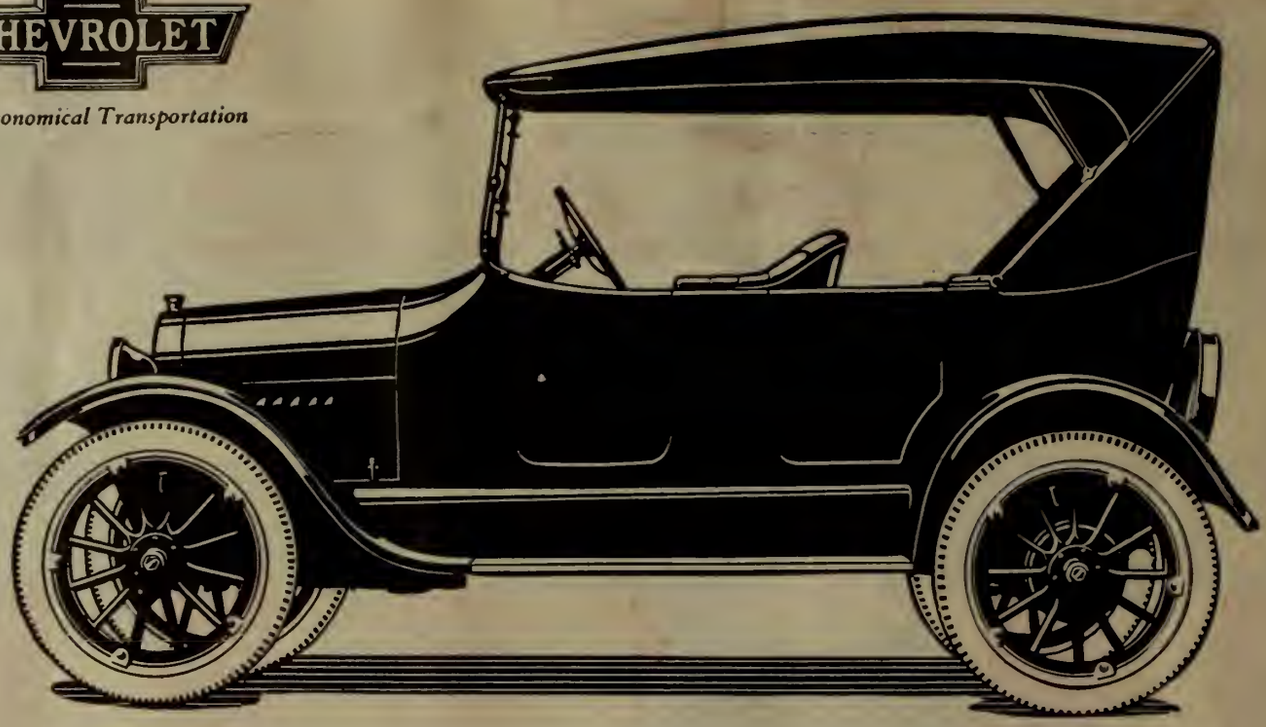
TEN CENTS

A REMARKABLE ARTICLE BY LUTHER BURBANK—PAGE 5

CHEVROLET

For Economical Transportation



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$525

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New Superior Model Breaking All Sales Records of Standard Fully Equipped Cars

This leadership has come only from sheer superiority in value per dollar of price. Price, operation and maintenance considered, your dollar buys the most transportation in a Chevrolet.

Equipment and accessories considered, Chevrolet is the lowest priced car made.

You buy it all at one time, because Chevrolet is *ALL THERE* as sold—nothing more to buy but the license, gasoline and oil.

Chevrolet Invites Comparison Because Comparisons Sell Chevrolets

Consider What Chevrolet Equipment Means:

Standard Rear Axle Construction. The new Superior Chevrolet has the strong, quiet Spiral Bevel Gear Axle that "stands the gaff" without breaking.

Standard Transmission—three speeds forward and one reverse.

Standard Braking System—foot service brake, hand emergency brake.

Standard Electrical System—Starter, storage battery, Remy ignition, electric lights front and rear, on battery circuit.

Standard Water System—pump circulation, large, honeycomb radiator and fan. This means a cool, efficient engine, saving gasoline and oil and ensuring driving comfort.

Standard Doors—two on roadster and coupe, and light delivery, four on touring and sedan.

Standard Instrument Board—containing speedometer, ammeter, oil pressure gauge, lighting and starting switch, and choke pull.

Standard Type of Carburetor, with exhaust heater—one reason why you get most miles per gallon of gasoline with a Chevrolet.

Powerful, Valve-In-Head Motor—the same type as used in successful cars selling at much higher prices.

Demountable Rims—extra rim on rear. No trouble to change tires on a Chevrolet.

Many Other Advantages which will be noticed on inspection, comparison and demonstration.

No matter what car you own or think of buying, see the New Superior Model Chevrolet

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Division of General Motors Corporation

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Applications will be Considered from High Grade Dealers in Territories not Adequately Covered

Dealer inquiries should be addressed: Chevrolet Motor Co. of California, Oakland, California

OUR EDITORIAL POLICY

[illegible]RCHA[illegible]D and FARM is a magazine [illegible] by and for agricultural people. We [illegible]lieve that to th[illegible] t[illegible]ller of the soil is [illegible]ue the best that life affords. We be[illegible]lieve that he is the bulwark of the Nation. We honor him as the basic producer. His problems are our problems; his triumphs, our triumphs; his joys and sorrows, ours. To record hie achievements and expose the duplicity of his enemies to fight for and with him; to give him genuine help and practical information, to assist, entertain and inspire every member of his happy household—that is the policy of ORCHARD and FARM.

ORCHARD and FARM

ESTABLISHED 1888

Published Monthly by Country Life Publishing Company

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"THE SILENT PARTNER OF THE SUCCESSFUL FARMER"

YOUR QUESTIONS ANSWERED

ORCHARD and FARM is an institution of service. Subscribers may receive free of charge answers to questions upon any agricultural subject. Through its large staff of specialists, and its close contact with authentic sources of information, this magazine is able and willing to serve any subscriber who requires aid or information. Be sure to write name plainly and to give complete address, including street, R. F. D., or box number.

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Pithy Paragraphs

Some men who think they're "hard-boiled" are merely scrambled.

Is it any worse to live from hand to mouth than from can to mouth?

Monday morning is about as welcome to Father as Saturday night to little Johnnie.

The pig crop is short this year—but there is the usual abundance of road hogs.

A good neighbor is one who is always willing to lend, but never needs to borrow.

$ucce$$ is a matter of dollars *and sense.*

Editor.

AMONG OURSELVES

Ten women readers won *cash prizes* in ORCHARD and FARM'S "Pin Money" contest, just closed. See page 20 for names and addresses of these fortunate subscribers.

That O. H. Barnhill story is in type, and it's even better than we anticipated. A true account of the career and methods of a former Kansas cattleman who now is one of the most successful vegetable growers on the Pacific Coast. *Featured in the August number.*

Do you like magazines? Do you prefer fiction, essay, history, household hints, patterns, poetry, drama, children's stories? Whatever your preference, ORCHARD and FARM can supply you at a saving. We have made arrangements with practically all the leading publishers of America to combine ORCHARD and FARM in "clubs" with other magazines. Send for latest circular. Tell us what magazines you read. Get in touch with us before you subscribe for ANY other magazines. Save on your renewal to ORCHARD and FARM. Stop paying news stand prices. Subscribe through ORCHARD and FARM and spend the difference for something else you want.

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[illegible]

The White Mule Must Have Had an Awful Kick!

The village cut-ups were wending their way uncertainly homeward.

"I say, Bill," warned one of the occupants of the front seat, "I wantsha be ver' careful how y' handle that steerin' wheel. Y' might drive us int' th' ditch!"

"Me?" ejaculated the other, in surprise. "Why, I (hic) thought YOU was drivin'."

Assuming that a special providence watches over inebriates, no doubt these Volstead defyers escaped a crash.

But there is no guardian angel to guide the sober man who refuses to help himself. He who is blind to the educational and business value of advertising closes his eyes to one of the most potent forces in modern civilization.

There is much to be learned from the advertisements appearing in ORCHARD and FARM. Glance over the interesting questionnaire published below for the convenience of our subscribers. *"You haven't read the magazine until you've read the ads."*

IMPLEMENTS, MACHINERY, FARM ENGINEERING, IRRIGATION—

Building Material—Can I save the middleman's profit? 17
Concrete Mixer—Is there a type especially designed for farm use? 9
Cream Separator—How will a good separator pay for itself? 19
Dusting Machine, Portable—Is there a low-priced, portable duster for applying nicotine products? 13
Hay Harvester—Is there a successful combined harvester and baler? 22
Irrigation Equipment—Where can I get estimates on installation of modern irrigating supplies? 16
Paints—How can I save money on paints and building supplies? 21
Pumps—Can I purchase a pump on a guarantee basis? 9
Saw, Log—What low-priced type carries long time guarantee? 13
Shingle Oil—How may shingles be protected to prevent warping? 16
Well Boring Outfits—Is there a real one-man type? 19
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TRACTORS, TRUCKS, AUTOMOBILES, EQUIPMENT, REPAIRS—

Automobile—What is the lowest price at which I can buy a fully equipped motor car? 2
Automobile School—What is the best method of teaching? 17
Gasoline—How can I be sure of uniform quality? 14
Lubricating Oil—What are the three requisites for satisfactory tractor oil? 10
Tractor—What features make for faithful belt performance? 13
Tractor—What is the best evidence of a tractor's efficiency? 15
Tractor—Is there a dependable "baby" tractor? 19

TREES, PLANTS, SEEDS, ORCHARD EQUIPMENT, FERTILIZERS—

Fruit Trees—How can I get present prices on nursery stock? 19
Lime—How can I meet my lime requirements at low cost? 12
Nitrate of Soda—What is the advantage of this source of nitrgoen? 19
Rhubarb—What profit can be made in producing this vegetable? 19
Rhubarb—What is the advantage of summer planting? 20
Spray Material—What material kills parasites by both contact and fumes? 12
Sprays—Who will inspect my trees and give personal advice on spraying? 21
Sulphur—Is a carrier such as kaolin necessary in applying sulphur? 13

POULTRY AND PET STOCK—

Cavies—How can I make money producing cavies for meat purposes? 11
Chicken Lice Destroyer—Can lice be eliminated by the use of medicated water? 15
Poultry Food—Why should I use meat scraps and green bone? 20
Poultry Feed—Which is more important in successful poultry raising—feed or stock? 24

FOOD, CLOTHING, HOUSEHOLD EQUIPMENT, MUSIC—

Ant Paste—What material makes ants disappear? 21
Coffee—How can I get good coffee at low price? 17
Electrical Equipment—Why are electrical household appliances of special interest to farm women? 23
Fly Exterminator—What non poisonous chemical will destroy flies? 19
Light and Heating System—Where can I get information about home lighting by carbide gas? 17
Oil—What is the advantage of kerosene for summer fuel? 22
Stoves—How can the rancher have a gas stove without gas connections? 7

MISCELLANEOUS—

Bee Supplies—Who sends free booklet on bee keeping? 13-14
Fruit Marking Machines—Is there a satisfactory type? 15
Goat Publication—What magazine is devoted to the milk goat industry? 10
Nut Journal—What publication is devoted to nut growing? 19
Photographic Service—How can I be assured of satisfaction in developing and printing? 7
Resorts—What resorts are reached easily from Los Angeels by trolley? 19
Serums—Is there a clear, refined hog cholera serum? 19
Telephone—What is the real estate investment of the telephone company? 20
Tents—Where can I buy a regulation army tent for $1[illegible]? 19

LAND, INVESTMENT OPPORTUNITIES—

Farm Lands—Where can I get cheap land under encouraging conditions for farming? 9

COMING NEXT MONTH

"To Success by the Milk Lamb Route." That's the title of one of Albert J. Mason's most interesting and informative articles, scheduled for publication next month. It is the story of a young French-American who settled in the San Joaquin Valley of California, and, starting without capital, quickly achieved independence through the production of early market lambs.

COVER CROP CONTEST
WIN $20!

It has been decided to continue the "Cover Crop Contest" until July 20. More than $35 in cash prizes offered ORCHARD and FARM subscribers, the awards being divided as follows:

For the best letter on cover crops $20
Second prize 10
Third prize 5
For each additional letter considered worthy of publication 2

No letter may exceed 1000 words in length. A committee of competent judges will decide upon the winners and should there be ties (this rule applying to all ORCHARD and FARM contests), each tying contestant will receive the full amount of the prize involved.

What have cover crops done for you? What "Don'ts" have you learned in using cover crops? What have you discovered about varieties, seed, planting, irrigation, plowing? If you consider the use of cover crops essential, tell why.

A chance to earn a prize, and at the same time, to help fellow subscribers. Write your letter NOW, before you forget. Address The Editor, ORCHARD and FARM, 1111 South Broadway, Los Angeles. Contest continued until July 20. Your letter must bear postmark on or before that date. Results announced in August number.

THE "GREEN" HAND

The Boss (Upon John's return from town with a shipment of bee supplies): *"Well, have you the hives?"*

His Nibs—"No, sir. I got some chaff down my neck. That's why I scratch this way!"

Chaff is annoying no matter where it's found—in a magazine, for instance. The publishers of ORCHARD and FARM take pride in the fact that it's "all grain" and no chaff, free from "smut," and delivered clean. If ORCHARD and FARM grades "A-No. 1" in your estimation, why not plant the seed of satisfaction among your friends by telling 'em what you think of it? Or—just send a list of names to whom you would like to have sample copies mailed. We'll do the rest.

WITH THE CAMERA MAN AT BURBANK'S HOME

A CORNER of Burbank's "Art" poppy bed. Note height of plants and profuse white blossoms. Insert—"close-up" of Art poppy, showing size of flowers. Mr. Burbank has created many varieties of the poppy.

A BED of "Rainbow" chard, [illegible] feet in height. At [illegible] plants in Burbank's gardens are "making" hundreds of [illegible]

ORCHARD and FARM

VOL. XXXIV JULY, 1922 NO. 7

How I Produced Pitless Prunes

Great Plant Breeder Writes Exclusively For ORCHARD and FARM

NO OTHER farm journal has the privilege of publishing the original literary work of Luther Burbank. This wonderful man, at the age of 73, is achieving some of the most remarkable triumphs of his career.

In this article he tells how, after 30 years' patient labor and study, he has produced prunes and plums which are both pitless and seedless. The solid breakfast prune, without the annoying stone, soon may be a universal reality, Mr. Burbank says. The time is at hand, he asserts, when all commercial varieties may be grown without stones.

To this master artist, plants are truly alive as children, and they are equally as plastic in his hands. No man has advanced further in his chosen profession; no man ever loved his profession more.

By Luther Burbank

WRITTEN ESPECIALLY FOR ORCHARD AND FARM

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PLUMS, peaches, nectarines, apricots and similar fruits all have hard, stony substances around the kernel; and many people have taken this as a matter of course, not thinking to inquire why the meat is thus protected with this hard, stony covering.

There are two objects, and probably more, in this provision of nature. If the kernel were unprotected by this "coat of mail," birds, animals and even insects, all of which are fond of fruit, would destroy the seed, which is very nutritious and inviting to them, often even more so than the fruit itself.

NATURE'S PROTECTION

Probably few, if any, of such plants would be in existence today had it not been for this protecting shield. And the stony covering is not only to protect the seeds from birds, animals, and insects, but also to shield them from sun, wind, rain, and frost until the season arrives when they should germinate and produce their kind in new trees or plants.

The stones of fruits, however, are of no use for man's purposes, and it would be far better if they were never produced, since a solid fruit without a stone would always be much more acceptable.

But this feature of inconvenience is not the most detrimental: a tree which produces, say five hundred pounds of fruit, usually produces about one hundred pounds of this stony material, which costs probably four times as much to grow as all the flesh of the fruit together. *Therefore a tree bearing stoneless fruit would without question produce—other things being equal—at least twice as much fruit as one bearing stones.*

HOW EXPERIMENT WAS STARTED

About thirty years ago I learned of the existence of a *bullace*, or half-wild plum, which had been grown as a curiosity in France, because it had only a part of a stone around the meat. In 1890 or 1891 I sent to the Transon Freres Nurseries in France for some the grafts of this *"Sans Noyeau,"* as it was called in France, which arrived in due season and were immediately grafted into some French prune trees.

During the second or the third year they began to bloom and produce fruit, which was about the size of a small cranberry, very acid, flavorless, unpalatable and scanty in yield. The tree, or more properly bush, was a low growing, straggling one, but it had the one desirable quality for which I was looking; that of possessing only part of a stone—only a wide rim around the meat.

SELECTION AND PROPAGATION

[illegible] crossed with the French prune, and with numerous other plums and prunes, but among the first lot [illegible] I obtained some plums [illegible] larger than the French prune, in which there was much less stone than in the wild *Sans Noyeau*, and many of them were superior in quality.

[illegible] were carefully saved and planted, and from them still better [illegible] obtained much larger [illegible] greater variety of colors [illegible].

[illegible] in which the [illegible] were entirely eliminated, and the [illegible] size and quality [illegible] other ge-

erations have been produced, among which are some as sweet as the French prune, and wholly without stones. *I now have probably eight or ten thousand different kinds of stoneless plums, one-half of which have borne fruit, while the others are expected to bear this year or next.*

A NEW PROBLEM

As stated at the outset of this article, the stone was for the protection of the seed, and I found it difficult to save the naked seed until planting time. Various insects, especially millipeds and eel worms, would get among them and destroy them in a short time. Fungous diseases also attacked them, and for several years more than three-fourths of all the seed that had been saved for planting was lost.

At last a plan for keeping them was developed; so that now there is no more trouble in raising stoneless plums and prunes than those with stones.

Plum seeds of any kind will never germinate if once they become thoroughly dry; it is, therefore, necessary that all plum seeds be kept moist until they germinate. The stoneless plums are no exception to this universal rule.

HOW SEED IS TREATED

My new method of treatment is as follows: When the stoneless plum seeds are removed from the fruit they are immediately washed in clear, fresh water, then for a few minutes immersed in a weak mixture of bluestone and lime, after which they are rinsed in fresh water and placed in damp sawdust, which has been sterilized by boiling, care being taken that this is just barely moist, not wet.

The box in which the seeds are preserved is placed on the north side of some building in a cool, shady place and examined occasionally to see that the seeds do not become too dry until the proper time for them to begin to germinate; then they should be planted out of doors like any other plum seeds. If treated in this way nearly all the seeds will germinate readily, and each may be expected to produce a fine young tree in a comparatively short time.

These unprotected seeds, like the cactus from which the spines have been removed, the berries from which the thorns have been eliminated, and all other plants which have been greatly improved from their wild state for the use of man, because of the removal of their natural armor of defense, must receive man's protection in order that they may accomplish for him the most efficient service.

WILL ALL PRUNES BE STONELESS?

The time is no doubt almost at hand when all our plums and prunes will be grown without stones, since this successful experiment of removing them from so many thousand varieties can be followed up and the stone removed from all varieties, thus giving the tree an opportunity for new vigor, whereby it can produce fruit more abundantly and of better quality.

Even though the fruit should not be of better quality (although it certainly will be) the very fact that elimination of the stone allows the tree to produce at least twice as much fruit each season is sufficient inducement to make all our plums and prunes stoneless.

SEEDS ALSO ELIMINATED

In some cases the stoneless prunes also have been made seedless, the kernel itself being wholly eliminated. Frequently I have been asked how trees are reproduced when they develop no seeds. That is very easy, when one knows how. Take the pollen from the seedless prune and apply it to the blossom of the stoneless prune, and you obtain seeds again, so that the stoneless or even the seedless varieties cannot run out, even if the seeds are not produced in the fruits as usual.

Many horticulturists and scientists who have visited my place have been unable to believe that a plum could exist without a stone. But like many things that have been performed that formerly were thought to be impossible, this one is established, and the facts are embodied in many thousands of stoneless varieties.

The Orchard in Midsummer---Timely Tips and Helpful Hints

By George P. Weldon

CONTRIBUTING HORTICULTURAL EDITOR OF ORCHARD AND FARM
POMOLOGIST, CHAFFEY JUNIOR COLLEGE OF AGRICULTURE

THE midsummer days usually find the fruit grower in a state either of exultancy or of disappointment—exultancy, if nature has been kind enough to withhold frost and other disaster so that her part has been accomplished well, and if man has co-operated with nature in spraying, cultivation and general attention, there is still more reason for contentment.

But what if the grower has not done his part? The answer is clear to any one who has had experience in fruit culture. Nature frequently tries to do her share, only to be hampered later by mistakes, carelessness, idleness and inattention on the part of her helper, man.

George P. Weldon

Nature cannot produce a crop of first class fruit alone. She is concerned about the insect that comes to the blossom to sip the nectar, or the larva which gains its living by eating the fruit; she is concerned also about the plants which we call bacteria and fungi and, if left to herself, will allow these things to demand their part of the crop through disease, the grower losing proportionately.

Fruit growing demands a constant and intelligent fight against natural enemies, and only the man who possesses the ability and nerve to carry on this fight can expect ever to make a financial success of the business.

Many of the natural enemies of fruit trees are subject to man's control; some are not. A few of the pests which are commonly met with during the summer time and which are controllable by proper methods, are treated in this article.

Summer Pest Control

NEARLY every kind of plant is attacked by some species of plant louse or aphis. Sometimes the species has a special liking for a particular fruit and will attack nothing else, at other times there may be several fruits listed among its foods.

The apple grower is very familiar with one species, the woolly aphis, which confines its attack almost entirely to the apple tree. The snow-white colonies of this louse are well known to every grower, and often are abundant enough to cause alarm.

CONTROL OF APHIS

It is not always an easy matter to determine whether a spray is needed to control. Aphis are preyed upon by many natural enemies, among which are the ladybird beetles, the lace-wing flies and the syrphus flies. When some one or more of these enemies are present in large enough number to prevent a serious infestation of the pest, the grower probably would lose by spraying.

SPRAYING VS. NATURAL METHODS

If, on the other hand, these aphis enemies are scarce, spraying may be an absolute necessity. The fruit grower should become familiar with the natural enemies of this as well as other plant lice, in order that he may be able to make an intelligent decision regarding the necessity for spraying.

Many times when aphis become abundant, the enemies increase to a point where they soon gain control, and a spray under such conditions would not be advisable, as it would kill many of the natural enemies, thus allowing the increase of the pest, and it might possibly do more harm than good. Yet frequently in cases of this infestation the natural enemies are scarce, and spraying is the only means of protecting the trees.

THE BEST SPRAY

The best spray for aphids of all kinds is nicotine sulphate. A common form on the market is known as "Black Leaf 40." This always should be used with soap or a soap oil emulsion.

If in a 200 gallon spray tank, nicotine sulphate is used at the strength of 1 part of the nicotine solution to 1000 parts of water, and 5 or 6 pounds of whale oil soap are added, we have a spray that for all plant lice is thoroughly effective.

RED SPIDER CONTROL

There are several species of tiny mites which bear the common name, red spider, that may increase to an alarming extent during the summer months. The presence of these pests may be recognized by the light yellow "sickly" color of the foliage. Some species spin a fine web over the surface of the leaf. This web catches dust, and red spider infested trees may be brown with dust from the road.

Control of red spider is accomplished by means of sulfur applied in spray or dust form. There are certain wetable sulfurs, such as "atomic sulfur," that mix readily with water and that are convenient to use. Flowers of sulfur may be dusted upon the trees with good results. Many growers prefer the liquid sprays, believing that greater thoroughness and therefore greater efficiency usually results from their application. Any form of sulfur may be applied for red spider, cost and convenience, therefore, are factors that will determine the method chosen.

CODLING MOTH

Apple and pear growers will find it necessary to spray for the codling moth during the summer months. The number of applications will depend upon the seriousness of the infestation. In most cases at least two sprayings with lead arsenate must follow the calyx application. There are two broods of this pest, and if spraying for the first brood has been neglected or if for any reason the pest is abundant, spraying may be necessary during July and even as late as August with some of the later varieties. Apples suffer more from the attack of codling moths than pears. The former may require five sprays for complete control, the latter seldom requires more than three.

CATERPILLARS

Under the name, "caterpillar," are grouped the various species of moth or butterfly larvae or worms as they are commonly called. The red-humped apple worm, the fall web worm, the tussock moth and others may give trouble. All these leaf-feeding insects may be treated with lead arsenate.

The few general recommendations of this article are designed to put the grower on his guard. If any of the pests mentioned, or others, occur in the trees, their presence should be detected at the earliest possible moment and control measures applied before serious injury has been done.

Apricot Gummosis

THE list of diseases and pests that the fruit grower must combat in order to make a success of his business is steadily lengthening, and not a few growers become discouraged because of the necessity for ceaseless warfare.

One of the late additions to this list is bacterial gummosis, a disease which (as the name indicates) is caused by a tiny organism. This belongs to the genus *Pseudomonas* of that simple group of plant organisms which are called bacteria.

Its full name is *Pseudomonas cerasi*, the last part of the name being the same as the specific name of the cherry. This agreement in names comes from the fact that the disease was first studied in connection with the cherry, which it attacks, as well as the apricot, plum, prune and occasionally the peach.

SIMILAR TO BLIGHT

Bacterial gummosis of stone fruits is not unlike blight of the pear and other pome fruits. This season very severe cases of the disease have been noted in San Bernardino County [illegible] not a little damage has resulted.

The presence of this trouble may [illegible] detected by failure of the [illegible] to open, wilting and dying of the [illegible] growth, and the presence of gum [illegible] amber color oozing from the infe[illegible] parts of the tree in the early spri[illegible] Girdling of branches and their [illegible]quent death may take pla[illegible] D[illegible] the dormant season there are [illegible]teristic smooth, light colored ar[illegible] bark, which indicate the organ[illegible] present at this time and is [illegible] waiting for growth to begin, w[illegible] will become active.

VIGILANCE NECESSARY

Apricot growers should be on [illegible] lookout for this infection. If on[illegible] small number of dis[illegible] ar[illegible] their removal by cutting away w[illegible] pruning tools may check the [illegible] of the disease. Removal of winter[illegible] cankers is very important, and th[illegible] cation of the disease now will [illegible] one to control more effectively by w[illegible]ter cutting.

Disinfection of pruning to[illegible] wounds is essential. For tools [illegible]rr[illegible]sive sublimate (bichloride of mercury) 1 to 1000 solution, and for wound[illegible] cyanide of mercury 1 to 500 [illegible] eff[illegible]ive. A mixture of the two will [illegible] for both tools and wounds.

In severe cases of general infectio[illegible] cutting away of the infected parts ma[illegible] not be practical, but where the d[illegible]ease is localized, much good may [illegible] accomplished.

Fortunately, apricot gumm[illegible] primarily a young tree disease, and [illegible] chards as they grow older are [illegible] what resistant, although th[illegible] n[illegible] never entirely overcome it. Trees fr[illegible] five to eight years of age usually [illegible] most severely infected.

Effect of Bacterial Gummosis

The apricot tree, shown at the right, shows effect of gummosis infection. Note the dried-up buds near tips of twigs.

Below is shown a "close-up" view of dead and dying branches of an apricot tree infected with bacterial gummosis.

How Much Fruit Should a Young Tree Bear?

GROWERS of frui[illegible] alarmed because very [illegible] may set rather heavy cro[illegible] of fruit. Since it is perfectly natural [illegible] fr[illegible] trees to bear, they will not be [illegible] by early production unless [illegible] to overload.

As long as a tree make[illegible] growth, fruit production will not hurt it. Peach and plum trees may [illegible] considerable fruit at two or three years of age, even when only [illegible] they sometimes begin [illegible]ing.

Under the long system of [illegible] which is now being so [illegible] ticed, there is a tendency for t[illegible] bear more heavily and earlier t[illegible] der the old system of heavy [illegible] back. It has been not[illegible] that [illegible] rather heavy fruit pr[illegible] early age, such trees w[illegible] growth and apparently th[illegible] terference with their g[illegible]

While heavy thinning [illegible] able in the case of [illegible] they may be a[illegible] and *the pra[illegible] off seems t[illegible] fac[illegible] of [illegible]*

New "Combine" Hay Harvester

A CALIFORNIA invention that many believe is destined to assume national importance is now [illegible] in Los Angeles. It is a self-[illegible]d, combined hay harvester and [illegible]. This unique device picks up the [illegible] from swath or wind-row and de-[illegible] it, baled and tied in the usual [illegible]r. Patents have been applied [illegible] several of the important features. [illegible] front end of the machine re-[illegible]s a motor truck, a powerful en-[illegible] under the hood serving both to propel the machine and to operate the baler

Designed by a practical farmer, G. G. Bennett, who sought a method of reducing his hay hauling costs, the new harvester is expected to revolutionize the entire hay industry. It is said to replace six men and to operate at a cost of 96 cents a ton as against $3.35 per ton for the ordinary baler and crew. The crew for the new machine consists of a driver and two men

(Continued on Page 22)

Above is shown the "business end" of the Bennett Hay Harvester. Arrow at right indicates finger feed which gathers the hay and delivers to the pre-compressor. Arrow at left shows location of pre-compressor. Insert, left to right: F. H. Hess, Secretary and Treasurer; E. M. Hamilton, Engineer; Bert Hobson, Sales Manager; G. G. Bennett, President and Designer, officers of the Common Sense Farm Machinery Company, formed to manufacture this product of California genius which many believe is destined to revolutionize hay industry.

An Interesting New Tractor Development

A NEW industry for California, [illegible] upon the invention of a Los Angeles designer appears to [illegible] the road to success. George [illegible], a Los Angeles engineer, has [illegible] patented an entirely new [illegible] tractor, [illegible] hydraulic [illegible] plows.

[illegible] Mr. Ziegler is [illegible] production of a [illegible] tractor embodying this [illegible] three-[illegible] third wheel [illegible] such [illegible] of gravity that overturning is impossible.

The machine turns in a five-foot radius, backs with the implement as easily as it goes forward, and because of its narrow width and compact construction promises to be of particular interest to vineyardists.

No wheel runs in the furrow, and even with an implement hitched far out at the side so as to work close to orchard rows, there is practically no side draft The tractor comes equipped with 3-gang plow. By means of the hydraulic lift the operator raises the plows out of the hardest ground simply by touching a lever.

Ranchers Now Cook With Gas!

Coleman Cookers bring the advantage of City gas to the Country home.

They burn with a clear, hot, blue blaze. No smoke, no soot, no odor, no greasy wicks.

They make their gas from motor gasoline contained in an air tight tank.

They are safe, simple and economical. They operate under pressure and cannot be filled while lighted.

Made in a variety of sizes and styles for homes, hotels, restaurants, camping, etc.

A complete system for lighting and cooking with large outside tank can be installed at low cost.

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172 North Wilson Avenue **Pasadena, Calif.**

Girls and Goats--- The True Story of a Great Adventure

HERE is a question for our women readers: If you were a Stanford graduate with A.B. and A.M. degrees, would you take up goat raising as a profession?

Miss Irmagarde Richards left one of the highest salaried teaching positions in the West (professor of Archeology, Greek and Latin at Mills College) for just this purpose. Nor did she lack a sympathetic and enthusiastic partner in her new enterprise, for she took with her to the fog-battled hills of San Mateo County, one of her former students

Las Cabritas Kids Take Their Meals Cafeteria Style

also a teacher, Miss Morris Wagner.

At that time, both the young ladies were worn with cares of their profession, tired of indoor work, and not in the best of health. Miss Wagner, in fact, had been ordered by her physician to live in the open.

But now, if tanned faces, healthy appetites, vigorous energy, and strong physiques are significant, there are not two healthier young women in California!

"They told me I was threatened with tuberculosis," smiled Miss Wagner. "I cheated the doctors with outdoor living and goat's milk. Yes, I drink the milk regularly and will give it equal credit with other factors in restoring my health."

Nine years ago, in 1913, these two venturesome young ladies established "Las Cabritas Goat Milk Dairy," a pure bred Toggenburg Ranch at Montara, San Mateo County, about 25 miles south of San Francisco.

Two Young Women Who Left the Beaten Path

THE herd of pure bred milk goats, owned and managed by the Misses Richards and Wagner, of Montara (San Mateo County) Cal., is valued at more than $10,000. In addition, these remarkable bachelor girls operate one of the most modern goat dairies and breeding establishments in America. They started nine years ago with little but enthusiasm and a "big idea." Already they have reached the top in their chosen profession.

Senior Herd Sire, "Las Cabritas Don Piccolo 8822." This fine buck, by his production of heavy milkers and show winners, has vindicated the judgment of his owners.

FROM SMALL BEGINNING

They began with 7 acres of land, $350 cash and a monthly income of $25 from other sources, one small tent and a tiny shed with only two walls. They expended their entire capital for one pure bred buck, two pure bred does and 4 "scrub" does.

Quoting the senior partner: "Since this foundation stock was acquired, we have never bought one animal except two new stud bucks. We have not had one cent of additional capital except that which we borrowed from time to time from our local bank and repaid as we went, from our income."

NINE YEARS' PROGRESS

Today, after nine years of arduous but always joyous labor, the partners own 120 pure bred Toggenburg goats and 30 fine grade does. They have one of the best-equipped milk goat establishments in America, including a concrete-floored, white-enameled milking barn fitted up exactly like a certified cow dairy in miniature even to the automatic stanchions. The goats are milked from a stool, like cows, not upon a platform.

Near the milking barn is an immaculate dairy house with all the fittings for handling Grade A milk, including sterilizing equipment, cooler and separator.

The goats have paid for these things and much more. There is now a commodious and comfortable dwelling house, a substantial buck barn and seven acres of fenced buck pasture in the hills. Two other well equipped barns have a capacity of 60 mature does and there is a separate barn and fenced pasture for 20 goatlings. For the kids has been provided a snug barn with a capacity of 50 head, which includes a glass-sun-porch for the little fellows.

GOATS HAVE PAID FOR ALL

Not only have the goats bought and paid for all this equipment, but also they have paid their own way for feed and upkeep, made a comfortable living for the two partners, and paid good wages for several years to a young man who supports his wife and three children with what he earns as an employe of the ranch.

The sale of milk has made the entire running expenses of the establishment. The milk is shipped in 3-gal. cans to a San Francisco hospital. An average of 60 milk does supply 1[illegible] gallons a day in addition to feeding the kids. The milk is used especially for tubercular patients, goat's milk being recognized as one of the most helpful, nutritious and easily digested foods known to man.

MILK SOLD TO HOSPITAL

The milk is sold at 6[illegible]c a gallon, usually running over 4 per cent butter fat, with an average bacterial count of only 3000 to 4000 per c.c. It is [illegible] under the same rules as Grade "A" cow's milk, except that no "T B" test is required, said Miss Richards.

"We hope eventually to [illegible] San Francisco connections which will enable us to retail our milk and get some of it into the hands of people who wish to feed it to babies. The hospitals, however, cannot use goat's milk for babies at present because there is such a limited supply that it [illegible] not be obtainable after the infants have been taken to their homes, which would necessitate a change of food that might be dangerous. Many doctors, however, now recognize the unequalled value of goat milk for infant feeding, especially in cases of [illegible] nutrition and disease, and we know of literally hundreds of cases of children whose health has been restored or lives saved by the timely use of this wonderful milk."

PROFITS FROM BREEDING STOCK

The dairy enterprise, however, is by no means the most important feature of the business. Las Cabritas Toggenburgs are known throughout the world as among the most desirable pure breds available. Our goats have entirely refuted the claim often made

(Continued on Page 16)

Above — Miss Wagner, as "Herdsman," bringing in the goats from the hills and (in circle) holding "Capella," a 7-quart doe. Below—Miss Richards, with the sister of a champion doe which sold for $900.

EDITORIAL DEPARTMENT

Timely Topics among Farm Folk

James C. Knollin, Managing Editor

Agricultural Students in Demand

THAT the old-fashioned "hard-headed" farmer who could see no value in the Agricultural College or its product, has passed on with the hair-cloth sofa and the moss-covered well bucket, is shown by a recent report from the California College of Agriculture.

According to E. C. Voorhies, assistant to the dean, more than 1000 students have been sent out this spring to work on farms and ranches, in response to the insistent demand from farmers, while several hundred more could be placed if they were available.

The increasing demand for college students on the farms is unquestionably is due to growing appreciation of the superior type of service rendered by the trained college student and the high character of this young man as compared with the usual itinerant farm laborer. These qualities more than offset his possible lack of practical experience, and if he is willing to be "shown," the latter deficiency is of small consequence.

New Farming Institute

AMERICAN tractor and farm implement manufacturers are to be congratulated on their foresight and broad outlook in organizing the "National Institute of Progressive Farming," a large association under the direction of Guy H. Hall. Its avowed purpose is to disseminate educational and statistical facts concerning better farming, co-operating with Farm Bureaus, the State Universities and the U. S. Department of Agriculture.

Indirectly, of course, the members will benefit, because better farming means a larger demand for machinery and modern equipment. These manufacturers and dealers are taking the "longest way around as the shortest way home." They are certain to benefit as they confer benefit upon others. A good example of the "service" ideal as exemplified in modern methods!

Pay for What You Get

IF YOU are suspicious of any dealer in any commodity and feel that his scales or measures are inaccurate, report should be made to the State Division of Weights and Measures, a branch of the California Department of Agriculture, Sacramento. Thousands of transactions are corrected by this bureau every year, and if discrepancies are found, the offending dealer or buyer is required to make good his error and to answer an official complaint.

One transaction recently reported involved the purchase of 89 reels of hop twine. Contrary to the law, this sale was effected on the basis of "gross" weight. Investigation following the complaint showed that the purchaser had been charged an excess of 4 pounds 1½ ounces per reel. The offending firm was required by the Department of Agriculture to remit its check for $118.80, which was returned to the buyer. The law in this case is designed for the protection of the consumer. Don't hesitate to report any suspicious transaction.

Wonderful Work of Dairy Organizations

THE power of the individual producer's small contribution, multiplied by thousands, is tremendous. This is illustrated by the work of the great dairy associations, such as the National Dairy Council, the World's Dairy Congress Association and the California Dairy Council, which is affiliated with the larger associations.

One of the outstanding accomplishments of these bodies during the past year was their fight against butter substitute manufacturers. A number of these were forced to discontinue advertising campaigns which misrepresented their products, and to omit intimation that these substitutes were the same as butter.

In their educational work also, the dairy organizations [illegible] wonderful results, carrying their teachings into [illegible], and through advertising and other publicity, [illegible] increasing the consumption of all dairy products.

[illegible] number of reasons, of course, for the success of this work, but the principal one is the same as that [illegible] profitable advertising campaigns [illegible] the real worth of the products advertised [illegible] that nothing can take [illegible] products in the diet. To [illegible] the public is to [illegible] could be brought about by any sort [illegible] had only to recognize and tell the people about the importance of his own business in order to get results.

To the interest and hard work of the men in charge of these projects, however, is due a large amount of credit. May the good work of the dairy organizations continue! Every dairyman can well afford his small share of the total expense.

Discrepancy in Income Tax Laws

THE attention of farmers throughout the country has been called to a seeming injustice in the administration of the income tax laws, which is pointed out by State officials of Kentucky in an official resolution passed by the Senate and House of Representatives of that State.

"Whereas," reads the resolution, in part, "under the law of 1919 it seems that persons and firms suffering losses in 1919 in certain conditions can go back to 1918 or 1917 and be relieved of taxes, and

"Whereas, from the revenue act of 1921, it seems that a person or firm suffering a loss in the year 1921 can make a deduction of such loss from the following year and even the year after, so as to equalize that loss, and

"Whereas, owing to declines during the calendar year of 1920 in the value of live stock, grain, garden and farm products, the farmers of the country lost money during that year.

"Therefore, be it resolved that Congress be urged to grant to those who lost during 1920, the same relief in regard to tax exemption as granted to those who lost in 1919 and 1921."

Inasmuch as most farmers were affected by adversity during the unfortunate year 1920, it seems certain the Kentucky idea will spread throughout all the agricultural districts with the result that some action will be taken to amend or revise existing laws. Here is a subject affecting directly our pocketbooks, and well worthy of careful investigation.

High Pressure Production

"I DO my best work under pressure."

How frequently we hear this expression! And it is literally true in the case of most normal human beings.

Pressure is a good thing when properly applied. And it is the application that marks the difference between individuals.

Find a man who has sufficient will power to apply the pressure to himself—and you will find, in nine cases out of ten, a successful man.

Discover one who has not only this faculty, but also the faculty of forcing others towards greater accomplishment, and you will have a leader of men.

The rest of mankind is divided into two classes—those who succeed at their tasks when properly directed, and those who dodge all pressure and never succeed. The degree of success of the former depends upon his employer or "boss" as much as upon himself. The latter is doomed to failure unless he mends his ways.

ORCHARD and FARM

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Stock Raising, Dairying and Mixed Farming

secure for the industrious settler ample returns for his energy. Clearing the cost of one's farm with a single year's crop has an appeal, and has been done by hundreds of Western Canada farmers. Taxes only upon land (not on improvements). Perfect climate, attractive social conditions, good neighbors, churches, schools, telephones, excellent markets and shipping facilities make life happy as well as prosperous.

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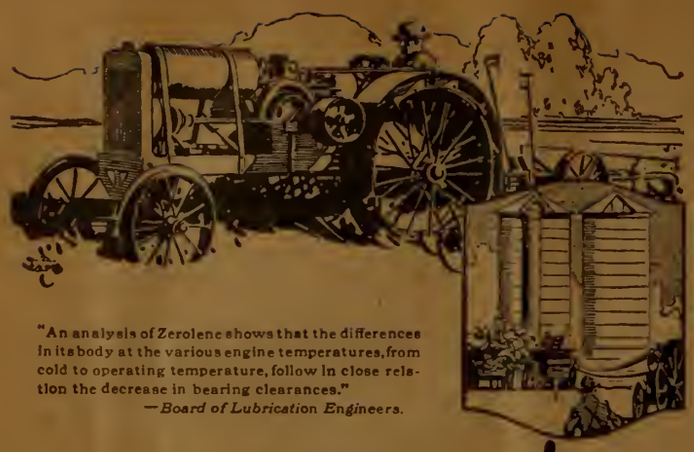

"An analysis of Zerolene shows that the differences in its body at the various engine temperatures, from cold to operating temperature, follow in close relation the decrease in bearing clearances."
—*Board of Lubrication Engineers.*

FLEXIBILITY!
Zerolene maintains always the right lubricating body—

When your tractor engine "warms up" to a stiff job of plowing or belt driving, be sure there's an oil in the crankcase whose "body" will adjust itself properly to those decreasing bearing clearances caused by heat expansion.

Zerolene, being flexible, helps to keep bearings cool, and maintains always a perfect piston seal—gets more work done, with greater ease and speed.

Among other advantages Zerolene has these three:

Stability—the ability to resist engine heat.

Oiliness—the ability to cling evenly to bearing surfaces, at the same time offering in itself a minimum of internal, frictional resistance to the engine power going to the traction wheels.

Purity—Zerolene oils are pure. The Standard Oil Company has always considered the removal of all detrimental properties and compounds as essential in making Zerolene.

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The
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145 South Broadway
Los Angeles, California
Dept. 21-G.

The Olive Comes Back
Restoring Its Flavor to Popular Favor

By J. J. Hoey
SECRETARY, CALIFORNIA OLIVE ASSOCIATION
WRITTEN ESPECIALLY FOR ORCHARD AND FARM

(Editor's Note—This is one of a series of articles on Co-operation and the Marketing of California Fruits. The ripe olive industry was dealt a serious blow by the unfortunate publicity given a few cases of spoilage three years ago. How the olive interests united to overcome the resultant prejudice and what is being done to restore the merited confidence of the consumer are topics discussed by Mr. Hoey in this interesting paper.)

IN DESCRIBING the work of the California Olive Association it is necessary first to say something of the inception of this organization, its purposes and its methods of operation. Unlike the usual fruit growers' associations of the State, the Olive Association is not a co-operative marketing body and, as an association, neither grows, packs nor sells olive products.

Its activities are limited to the doing of those things which can best be done by an organization toward the upbuilding of the olive industry, and which indeed, would not be done at all if left to individual action. Principal among these activities is the advertising of ripe olives by means of educational campaigns conducted on a national plan and designed to inform the consuming public regarding the real nature of the ripe olive, and through disseminating the knowledge of its attractiveness and food value, to increase the consumption of this distinctive California product.

J. J. Hoey

ORGANIZED SEVEN YEARS AGO

The California Olive Association was organized in May, 1915, in Los Angeles. Although many changes have come about since those days in the personnel of the membership, and in its plan of operation, these two fundamentals of standardization of the ripe olive and its exploitation still remain the foundation of the Association and claim its constructive efforts. And it is because standardization and educational advertising are truly fundamental in the development of the California olive industry that the present enlarged Association is committed to their accomplishment.

The crying need for the dissemination of the truth about the ripe olive in answer to the sensational statements of the press was met in part by the Association's first advertising campaign, started in June, 1920 and appearing in several of the largest magazines of national circulation.

THE FIRST ADVERTISING CAMPAIGN

While the amount of money expended in this first campaign was painfully inadequate for the great task of re-educating the American public regarding the ripe olive, nevertheless, it is estimated that 5,000,000 families of the country read the messages that the olive industry conveyed in the four great publications used in the campaign. At the same time the Association mailed a "broadside" of facts about the ripe olive to more than 80,000 retail storekeepers of the nation, as a part of the first educational campaign.

So great had been the recent clamor of the newspapers against the olive resulting in the inflaming of the readers' minds, that this first advertising effort of the industry failed noticeably to restore the demand anywhere in the East. Yet it cannot be said that the money was lost, because even under these most adverse conditions many thousands of people who previously knew nothing of ripe olives learned of the real nature of the product through the Association's educational campaign.

THE SCIENTIFIC SOLULTION

The ripe olive pack of the State fell off heavily, of course, in the face of the antagonized Eastern market, and in the season of 1920-21 great quantities of olives were made into oil. Meanwhile the Association had joined with the canners of the country and with the State and Federal Governments in the exhaustive bacteriological investigation that had been undertaken to determine the nature and control of the bacillus which had caused all the trouble in the few packages of spoiled goods in the East.

Two years' intensive work on the part of the country's most competent bacteriologists, and the expenditure of more than $100,000 by the canning industry, finally solved the problem of the olive packers as regarded the safety of this fruit, as well as d[illegible] ing to the canners of other affected foods the same safeguards through sterilization in the canning pr[illegible]

All authorities agree today that ripe olives as now packed in California are absolutely safe and wh[illegible] in fact as a result of the recent "scare"

At-a-Glance History of the California Olive

First planted at the Mission San Diego in 1769 by "Father" Junipero Serro, who brought the seeds of the fruit from Mexico.

Culture of the olive on a commercial scale begun in the late seventies, the manufacture of olive oil being the first use to which the fruit was put.

Industry languished for some years after it was learned that production of olive oil alone would not pay in the face of keen foreign competition, without adequate tariff protection.

Discovery of the canning of the ripe olive by Bioletti in 1901 gave rise to the present ripe olive business and encouraged planting of thousands of acres of Mission and Manzanillo varieties.

California's acreage of olives is now almost forty thousand, with 32,159 acres of bearing age and 7347 acres of young groves. Estimated area of lands in California suitable for olive growing, 500,000 acres.

Twenty-eight olive processing plants, large and small, now in operation in California. Estimated investment in factories and equipment, $6,000,000.

Estimated value of State's olive groves, $24,000,000.

Normal production of present acreage, 14,000 tons. Normal ripe olive pack, 400,000 cases of 24 quarts each. Output of olive oil in normal year, 240,000 gallons. Balance of crop going into other olive products of lesser importance.

Estimated number of olive orchards in State, 2500. Number of persons engaged in various branches of the industry, 8000.

The Olive Comes Back

The olives are considered the safest food in the world.

SENATOR JOHNSON LEADS FIGHT

Following the first advertising campaign, which ended in November, 1920, the olive industry called for the assistance of the Association in its fight to secure higher tariff duties, and the efforts of the organization for the succeeding several months were centered on this undertaking.

Facts and figures previously collected were compiled, briefs prepared and representatives sent to Washington to appear before the Ways and Means Committee. Two trips were necessary, one in the last hours of the Wilson administration and the second when the newly elected Republican House took office. While rates quite satisfactory to the olive industry were secured in the Fordney Bill, the olive people suffered a set-back in the Finance Committee of the Senate, which reduced the rates previously granted but, thanks to the able efforts of Senator Hiram J. Johnson, and the untiring work of the California Olive Association, the Senate committee was induced to restore the former rates and these rates have carried in the Senate

ADVERTISING TO THE TRADE

The second advertising campaign of the Association was started in the fall of 1921 and still is in progress. This campaign is confined to the retail grocery trade of the country and is designed to educate these powerful factors in the sale and distribution of our product to the fact that ripe olives again are in general demand, that they are worthy of the retailer's best efforts as a salesman and that the California Olive Association stands solidly behind the goods of its members and assists the dealer in his merchandising.

A strong feature of the grocers' campaign was the sending of a trained and experienced olive merchandiser to several of the large cities between the Coast and Chicago, to call on the wholesale grocery trade, address meetings of salesmen, interview chefs and hotel stewards and talk to retail grocers' associations, all this along purely educational lines. The entire dealer campaign was made necessary by our discovery that, following the trouble in the East, the retailers had ceased all efforts to sell ripe olives and had thus raised a wall between the olive industry and the consumer.

The educational advertising in the grocery trade magazines, plus the dealer "broadsides" and window display material, plus the educational work of the olive industry's trade representative, is resulting in a decidedly improved and improving situation in the retail trade as is evidenced in the picking up of the olive business in the East and the greater interest being shown by all branches of the trade in the ripe olive.

Mount Ida Packing Company's Huge Olive Processing Plant at Oroville, Largest in California

Olive Branch Bearing Fully Ripe, Purplish Black Olives of the Mission Variety

CONSUMER ADVERTISING NEXT

No consumer advertising is being done by the Association this season, as it was deemed vital first to educate the retail dealers to the fact that ripe olives now could be pushed to the utmost in a sales way since the product had passed through its hour of trouble and was now touched for by the highest authorities in the land and that new customers in large numbers would become interested in the ripe olive as a result of the educational work being done by the Association. The present trade campaign will continue until the first of September, while the advertising now being carried in three of the leading food magazines runs until December first. Advertising to the consumer will follow logically the restoration of the confidence and active interest of the dealers through the advertising now being done in the trade press.

DIRECT EDUCATIONAL WORK WITH DEALERS

In its work with the trade, the Association did not neglect the wholesaler and large distributor of ripe olives. These, like the retailers, also had lost interest in olives after the incidents of 1919 and 1920, and part of the Association's plan was to get in as close touch as possible with these powerful factors in the olive trade and get them again interested and working for olive sales among the retailers.

So it happened that the trade representative who was sent East spent a great deal of his time and effort in interviewing jobbers and their salesmen and giving them directly the facts about the ripe olive. He appealed to their self-interest again to stock this line and seek the profits which they had been passing up as a result of a mistaken idea regarding the possibility of selling ripe olives.

In a great many instances our representative went out among the retail trade with the salesmen of the jobbing houses and assisted them in getting their arguments over with the storekeeper. Whenever the opportunity offered, and this was quite often, our representative attended meetings of business, fraternal and social clubs and usually was accorded the privilege of addressing the gatherings briefly on the subject of the American olive industry. Also at these meetings, he had ripe olives served so that all attending gained a first-hand acquaintance with the food product that was being described.

[Next month Mr. Hoey will discuss olive standardization, methods of financing the Association, aims and plans of growers, and other factors of general interest.—Editor.]

Speed in Planting

TWELVE years ago the Fontana Farms Company, operating an 18,000 acre ranch six miles west of San Bernardino, faced the problem of planting 5000 acres to citrus trees from their own nurseries. Since that time they have added to this acreage every year.

Such large scale transplanting necessitated the development of a system that would not only facilitate handling, but also give a maximum of protection to the roots of the young trees.

The accompanying illustrations show the system that eventually was adopted. Twelve-inch well casing was cut into 18-inch lengths and an iron hoop riveted to the top edge of each section. After the foliage of the young trees is pruned back, these lengths are slipped over the foliage and trunk and driven down around the roots until the tops are flush with the ground.

This is done by two men with steel tamping bars. The pipe with the roots and the original earth enclosed then is dug up and loaded on to a wagon. In the grove the pipe is put in place, and after earth has been thrown loosely around it, is slipped out, leaving the tree in its new position.

The entire process from pruning the tree in the nursery to loading it on to the wagon consumes less than five minutes.—Glenn Palmer.

! VITAL !

A MESSAGE TO THE GROWER

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F. O. B. QUARRY Certified Weights **$4.50 Ton** CARLOAD LOTS (30 tons minimum)

TRY IT on your FERNS, ROSES—ALL FLOWERS

MAKE 'EM BLOOM

Trial Package **25c** 2 lbs. Gross Weight

MAILED ANYWHERE IN 3RD ZONE (300 MILES)
For 4th zone (600 miles) add 3c; 5th zone (1000 miles) add 6c; 6th zone (1400 miles) add 9c; 7th zone 1800 miles) add 13c; 8th zone, (over 1800 miles) add 16c.

TORRANCE LIME & FERTILIZER COMPANY,

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Dept. O. Phone 13859

AT LAST!

A Spray That Equals Fumigation

After many months of patient labor and grievous disappointments, the chemists of a Los Angeles Laboratory have successfully perfected a hydrocarbon oil emulsion spray which combines the effectiveness of fumigation with the economy and ease of spraying. It positively will not injure the most tender growths nor mar the beauty of bud or blossom. It is non-poisonous and non-inflammable, and, what is very important, the component parts of the spray will not separate. The ingredients are of the purest and best and are so combined that the finished product will mix with water in all proportions.

This spray has been aptly named "FUMISPRAY" for this very good reason—for a considerable time after spraying fumes are thrown off which act as effectively as direct contact of the liquid—thus every tiny crevice is FUMISPRAYED!

FUMISPRAY kills by contact and fumes the following parasites—Oyster Shell, San Jose, Purple, Black, Red, Brown, Cottony Cushion and Scurfy Scales; Green, Black and Wooly Aphis; Thrips; Red Spider; White Fly; Pear Psylla and other forms of insect life.

FUMISPRAY is the last word in insecticides. Do not confuse it with any other spray on the market. We guarantee you satisfaction. Sold in large or small quantities. Write for prices.

Special proposition to commercial Sprayers.

Herbicide Chemical Laboratories,
1963 Santee St.,
Los Angeles, Calif.

Citrus Topics for July

By Vincent F. Blanchard

Frost Protection for Citrus

HISTORY repeated itself for citrus groves this year with one of the most severe freezes ever experienced. Just as with all previous freezes, there will be many growers who will decide to reduce the risk in citrus culture by providing adequate frost protection systems, and there will be still more who will decide to take a chance with only an occasional freeze.

There has been much discussion of frost protection methods since the January freeze. With the increased interest due to the great damage, many inventors have brought forth schemes for reducing frost hazard.

In fact, so many new ideas have been presented that most growers are uncertain as to what is best. It is certainly to be hoped that growers will not discard the tried and proven methods to adopt new, untried schemes or delay purchasing equipment until some of the new methods have been demonstrated.

EXPERIMENT FIRST

It is perhaps true that the oil heaters are costly and require considerable labor to handle them, but it is just as true they have proven their worth as a means of saving both fruit and trees. The trial of new methods should be left to those experimenting with such methods, and should not be attempted on a large scale by many growers. Probably it will take several years for the new methods to be proven, and in the meantime our citrus groves must be protected. Oil heaters have been a success, and until something better has been demonstrated, they should be used.

It is not the intention of the writer to be pessimistic over new inventions for frost protection, for better methods must and will come. But they have not yet been established by general use.

Citrus Institute and Pest Control School

AT the last Citrus Institute which was held at San Bernardino, Dr. Barrett, president, appointed a special committee consisting of Farm Advisors of the citrus counties, to take charge of the summer meetings. The committee has completed its plans for this year's Institutes. One will be held in the Y. M. C. A. Auditorium at Pomona, on Friday, July 14, in connection with the Fifth Annual Pest Control School conducted by the Agricultural Extension Service for Los Angeles County, and another in the San Joaquin Valley at Lindsay in September.

In view of the great interest in frost protection for citrus trees and the desire on the part of growers to obtain the best information possible, it was thought best to devote the discussion at the Citrus Institute at Pomona to this subject. An effort was made to obtain well-qualified speakers who have had practical experience. The program for the Citrus Institute at Pomona is as follows:

FRIDAY, JULY 14, 1922

10.00 A. M.

1. The Extension Movement and its relation to the Citrus Grower—*Robt. W. Hodgson, Farm Advisor, Los Angeles County.*
2. The Farm Bureau and the Citrus Growers' Department—*W. S. Rosecrans, President, Los Angeles Co. Farm Bureau.*
3. The Conditions Which Occasion Injurious Frosts in Southern California Citrus Districts—*Floyd D. Young, U. S. Weather Bureau.*
4. Frost Protection at the Rancho Scape—*Howard E. Pressey, Mgr.*.

1.30 P. M.

5. Ten Years of Frost Protection in the Pomona Valley—*J. E. Adamson, Manager Pomona Valley Protective Assn.*
6. Frost Protection for the Small Grove—*Frank G. Weber, Mgr. Sierra Madre-Lamanda Park Citrus Association.*
7. Report Orchard Heater Committee, *Fruit Growers' Supply Co.*
8. New Ideas in Orchard Heating Technique—*W. R. Schoonover, Citrus Extension Specialist, University of California.*

A banquet will be held on Friday evening at 6:30, price $1.00 per plate, arrangements for which are being handled by the Pomona Chamber of Commerce. Reservations should be made. Prominent citrus growers and others will speak at the banquet.

The second day will be devoted to the Fifth Annual Pest Control School. The complete program has not been arranged, but it will include pertinent subjects pertaining to control of citrus pests.

These two meetings have meant much to citrus growers in the past and will be well worth the attendance of every grower who can attend.

Survey of Frosted Tree Treatments

DURING the past few months the writer and other members of the Agricultural Extension Service, have made a survey of citrus trees injured by previous freezes. There has been considerable disagreement as to results of various methods, some having success while others did not. The treatment of young trees has been especially puzzling. Large and small acreages of young trees were treated in order to rebuild them. Various systems were used, some of which are as follows:

1—Cut off below the head or main limbs and allow a single shoot to grow (Trunk to be cut off later).

2—Cut off below the head and allow several shoots to grow, tying one to the trunk for rebuilding and cutting the others off one to three years later.

3—Bud below the bud union into the old stock, training up two to three shoots, only one of which will form the tree, others to be gradually eliminated.

4—Allow shoots to grow from below bud union, which will be budded over to desired variety. (Above methods are for severely-injured trees.)

COASTAL VS. INTERIOR DISTRICTS

The survey indicated that in the coastal districts which are subject to favorable climatic conditions for the production of heart rot fungi it is doubtful whether it is worth while to attempt to save severely injured young citrus trees. On the other hand, it was found that in interior valleys where heart rot fungi do not develop so readily, many groves were saved and are in good condition today.

METHODS OF TREATMENT

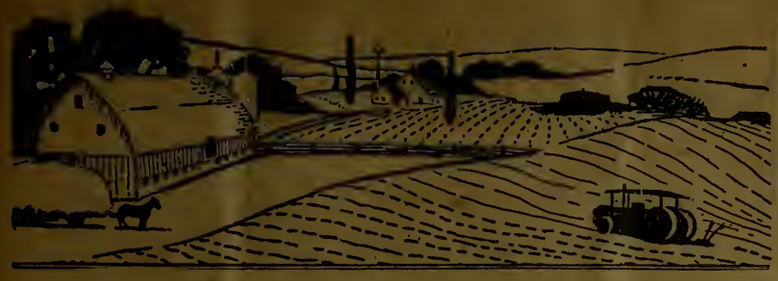
The most satisfactory treatments for such trees varied according to severity, but were similar in principle. The ones which gave best results are as follows: 1—Where the top is severely injured and there are bad frost cracks on trunk (which is not killed to bud union), cut top off just below head; whitewash; allow several shoots to grow, tying one to trunk; prune others back to suppress growth temporarily, and allow desired shoot to grow.

Extra shoots to be eliminated over a period of about three years and trunk finally to be cut off close to new trunk; disinfect and paint with grafting wax. Do not cut off extra shoots too soon.

2—When only top is injured and trunk is not cracked or is only partially cracked near head, cut top off below head or just below [illegible] crack and whitewash trunk. Train up three to four shoots for main limbs. These should be well spaced.

3—When top is killed to bud union, either insert buds of desired variety into old stock in the spring, or allow shoots to grow from [illegible] which are to be budded in the fall. The buds in the latter case should

(Continued on Page [illegible])



Walker Endorses Power Act

By Joseph Timmons

DR. W. H. WALKER, president of the California Farm Bureau Federation, endorses the water and power act.

From direct knowledge secured by a personal investigation in the province, Dr. Walker denounces as false the contentions of opponents of this act that the Ontario hydro-electric system is a failure; he proclaims it to be a magnificent success.

In an interview in his Berkeley office at the University of California, Dr. Walker gave me yesterday the first statement he has made for publication on this subject. He went on record unequivocally in favor of the water and power act. He was indignant at the misrepresentations the power corporations are spreading about the Ontario people's project.

Dr. Walker is nationally known as a member of the executive committee of the American Farm Bureau Federation, and every three months crosses the continent to attend its meetings.

Exclusive Interview Given Noted Writer

JOSEPH TIMMONS, a widely known journalist and former war correspondent, is touring the State of California to obtain information concerning the Water and Power Act, now creating no end of discussion in agricultural circles. The farmers, more than any other class of citizens, are affected by, and interested in, the proposed amendment. Mr. Timmons gives the views of Dr. W. H. Walker, President of the California Farm Bureau Federation, recognized as one of the agricultural leaders of the West.—Editor

WATER PLAN FAVORED

For two years as president of the State Federation he has visited again and again all sections of California. I caught him at his office when he had just come in from weeks of travel. He said:

I find many more for the water and power act than I find against it. As an individual, speaking for myself alone and not for the federation, I am strongly in favor of it. I am sure there is nothing in the whole act to which opponents point as a possible danger which does not exist doubly under the present private corporation monopoly as an actual evil.

I went to Ontario last August from Washington. First, I talked with power corporation men in Montreal and got their side of the case. Then I went to Toronto and through the province and talked with many persons of all classes. In the province I did not find one who said the system was a failure. They all thought it wonderful and were very proud of it.

ONTARIO SERVICE

More than 360 municipalities and districts are being served with light and power by the Ontario Hydro-Electric Commission. It has been necessary for each of them to vote twice to enter into the contract, and in not a single municipality or district has the proposal been defeated. In most instances the vote for it has been about [illegible] cent. Many of these elections have been held, of course, after years of operation had tested the merits of the public ownership scheme. [illegible] written documents against the power trust to [illegible] people of that [illegible]

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In Ontario wherever three farmers to a mile sign up the service is extended to them. They are using it for cutting silage and to run grinding machines, threshing machines, etc. The farmers are thoroughly pleased and the rural service is being extended rapidly.

It is worthy of note that the commission, a "political board," is doing a deal of pioneering. For instance, they are putting their high potential wires in lead-insulated cables and burying them in the ground.

The average rate, wholesale, is $18 to $20 per horsepower per year; the cost of local distribution is not great. I know many cases in California where the cost has been $9 per horsepower per month.

Opponents of the water and power act are insisting that comparisons of Ontario rates with California rates are not fair. Very well, it is fair to compare Ontario rates with rates just across the line in the United States under private ownership. Detroit and Winsor, Ontario, receive their electrical energy from the same source. Detroit is nearer the source, and its much greater size should reduce the burden of overhead on the rate payer. Yet Winsor gets its light and power 40 per cent cheaper than Detroit.

As to that $500,000,000 bugaboo: They claim they fear State bankruptcy if the State spends that amount right here in the State, yet the power corporations are preparing to spend several times that amount under supervision of the Railroad Commission and will ask and get 8 per cent return, net, above all extravagances and excessive overhead which the system encourages.

AS TO EXPENSES

I haven't been able in my own mind to work up any fear over a board at least as easily controlled by the people as is the State Railroad Commission, whose job it will be to invest State money at low interest rates in revenue-producing projects which give us light and power at cost and carry interest and sinking fund. When the bonds have been paid off we will own the projects outright, free of debt.

The Farm Bureau Federation, through its public utility department, has conducted for two years an investigation of power corporation methods. We have not found them so high-minded, so idealistic, that I am willing to trust the entire development to them on 3 per cent perpetual returns of projects which the people never will own.

The four or five largest companies right now are asking for more than $[illegible]0,000,000 for new projects, and they have in sight other feasible projects that will increase that new investment to not less than $1,600,000,000. They are not asking me off with that half-[illegible]

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Buy Titan with All Its Features for $700

FALL WORK will be handled more efficiently and profitably on many thousands of farms where Titan Tractors have been set at work this summer and where new Titan investments will be made during the coming weeks.

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When you make your power investment remember the reputation of Titan tractors and the security in McCormick-Deering service. See the Titan dealer.

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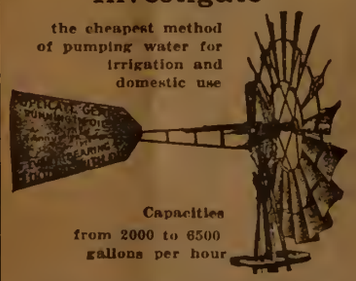

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"Bob" Jones' Corner

Little Stories of Farming

California at Chicago—Although it is a little early to make predictions concerning the December International Livestock Show, it is certain the University Farm will show again. It is quite likely also that a number of other herds will be represented, including Caledonia Farms, Sacramento (Shorthorn cattle); the Italian Vineyard Company, Guasti (Berkshire hogs); Bullard Brothers, Woodland (Rambouillet sheep), and perhaps Diamond Bar Ranch, Spadra (Duroc-Jersey hogs).

Heavy Grain Harvest—Early reports on grain harvest on Sacramento Valley bottom lands indicate a bountiful yield. While the upland grain is not doing so well, indications are that the bottom land barley will run from 30 to 45 sacks to the acre and a great deal of bottom land wheat will touch 30 sacks and above to the acre. The season has been very favorable.

New Horticultural Building—Construction of the new horticultural building at the University Farm, Davis, is proceeding rapidly. All the steel work has been finished and the interlocking tile is in place, so that the magnificent new fire-proof building has now taken shape. Finishing work of course will require several months.

Supreme in Peaches—Figures of the California Peach Growers' Association show that California's dried peach output is 95 per cent of the dried peaches of the entire country. In canning peaches, California leads the country by a comfortable margin, reports A. E. Sunderland, secretary-treasurer of the association.

Nagle to Wed—Fruit shippers and growers who specialize in deciduous were surprised, not to say astonished, recently by the announcement in a San Francisco newspaper that John L. Nagle, general manager of the California Fruit Exchange, is to be married to Mrs. Lesley Greig Chase of San Francisco. Nagle has been a bachelor for so long that no one expected he would ever be married. Of course he has thousands of well-wishers. Nagle, in addition to being the head of a large shipping organization, has a fine fruit orchard of his own at Pinehurst, Placer County, near Auburn.

Back to the Farm—Like many big men who have achieved a successful business career, John H. Rosseter, one-time head of the Pacific Mail and recently president of the Sperry Flour Company, has forsaken his desk and retired to his farm in Sonoma County. Rosseter has some of the finest harness horses in the world. His resignation as president of the Sperry Flour Company takes effect June 30.

Are Hogs Immune to Snake Bites?—Recent investigations by Government scientists tend to show the popular idea that hogs are immune to the bites of poisonous snakes is a fallacy. It is true, however, that their tough skin and thick fat layer frequently present an impenetrable barrier to the venomous poisons. Therefore, allowing hogs free run of infested land may reduce the number of snakes, as the hogs will kill them when caught at close quarters. Experiments in killing snakes by poisoning have proved unsatisfactory because the snakes feed upon living prey and cannot be exterminated with any kind of bait. Another fallacy concerning snakes is the belief they can strike from a great distance by springing or jumping. Three-fourths of the rattler's own length is about the range of his reach, and almost any poisonous snake will avoid mankind when possible. Protection of the legs with heavy boots or puttees is probably the best safeguard when entering deep woods or areas known to be infested.

How Long Will a Pear Tree Bear?—That the pear is in truth a long-lived tree is shown by the experience of J. R. Young of Maddock, Calif. A 50-year-old Bartlett on his place is expected to yield this year a ton of fruit. Scarcely any care has been given this tree for a generation, yet it is still in wonderful condition.

A Successful Tenant System

By Robert E. Jones

CONTRIBUTING EDITOR OF ORCHARD AND FARM

FORTY years ago, Henry Curtner, one of the early farmers of Santa Clara Valley, established on his place near Warm Springs a tenant system of farming, which has been remarkably successful in promoting the interests of the tenant and in solving the labor problem on a large ranch.

"Bob" Jones

The labor question always has been an acute one in the diversified California system of agriculture. The Curtner plan, which still is in vogue on the old Curtner place after a lapse of forty years, offers an example of good results that arise from confidence between employer and employe, or between landlord and tenant.

The farm, which comprises 1000 acres, partly in the valley and partly on the hillside, is now under the management of W. W. Curtner, a young man representing the third generation of Curtners.

A variety of crops is raised. There are approximately 200 acres of the valley lands planted to fruits, pears, prunes and walnuts. This orchard is operated by the owner.

The hillside lands, however, are in charge of the tenants and in season are planted to such crops as potatoes, string beans, peas and green corn for early market.

On the farm are 17 tenant families of Portuguese derivation. The elder Curtner obtained his original tenants from among the whalers—Portuguese sailors who came into San Francisco Bay and abandoned the sea for the land. These early Portuguese immigrants settled around Alvarado and gradually spread into the Santa Clara Valley, obtaining employment on the farms, sometimes as laborers and later as tenants.

It Has Stood the Test of Forty Years

A PERMANENT solution of the labor problem is the goal of every farmer. That one man at least has achieved the seemingly impossible is indicated by Mr. Jones' interesting account of the method used by Henry Curtner. The plan has proved equally beneficial and satisfactory to both landlord and tenant for more than forty years.—Editor.

TENANTS OWN HOMES

The tenant plan as established by the original Curtner may be described as follows:

Portuguese families own their own homes on Curtner land and are loaned foothill lands for the growing of potatoes, early corn, peas and string beans, for the spring market. The

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MINERALIZED WATER ROUTS CHICKEN LICE

Tablets Dropped into Drinking Founts Banish Vermin, Make Fowls Grow Faster and Increase Egg Yield

Any poultry raiser can easily rid his flock of lice and mites, make chickens grow faster and increase their egg yield by simply adding minerals to the fowls' drinking water. This does away with all bother, such as dusting, greasing, dipping and spraying. The necessary minerals can now be obtained in convenient tablets, known as Paratabs. Soon after the fowls drink the mineralized water,

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The method is especially recommended for raisers of purebred stock, as there is no risk of soiling the plumage. The tablets are warranted to impart no flavor or odor to the eggs and meat. This remarkable conditioner, egg tonic and lice remedy costs only a trifle and is sold under an absolute guarantee. The tablets are scientifically prepared, perfectly safe and dissolve readily in water.

Any reader of this paper may try them without risk. The laboratories producing Paratabs are so confident of good results that to introduce them to every poultry raiser they offer two big $1 packages for only $1. Send no money, just your name and address—a card will do—and the two $1 packages, enough for 100 gallons of water, will be mailed, and if you are not delighted with results in 10 days—if your chickens are not healthier, laying more eggs and entirely free from lice and mites—your money will be promptly refunded. Don't hesitate to accept this trial offer as you are fully protected by this guarantee.

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Rid Hens and Chicks of Lice and Mites

A Few Drops of Wonderful New Remedy in Drinking Water Does It —No Dusting, Spraying or Greasing

Any poultry raiser can easily and quickly clean out Lice and Mites by using a new Remedy recently discovered by a Kansas City chemist and called Imperial Lice and Mite Remedy.

All that is necessary is to occasionally put a few drops of this amazing remedy in the fowl's drinking water. It renders them immune from the attack of all blood-sucking parasites, as the pests positively will not feed on a fowl taking this remedy.

It also acts as a splendid Tonic and Blood Purifier as well as increasing egg production and growth, for with these pests eliminated, hens lay better and young stock grows faster. It is positively guaranteed not to affect the meat or eggs.

The manufacturers of Imperial Lice and Mite Remedy are anxious to get it quickly introduced among poultry raisers everywhere and make this Special Introductory Offer. Send no money, just your name and address, and they will send you a regular full sized $1.00 bottle and will also send you free a full size (double strength) $1.00 package of Imperial White Diarrhea Remedy, the standard time-tested remedy. Pay postman only $1 and a few cents postage when they are delivered. Any bottle you may use if you are not satisfied with results, and your money will be refunded.

IMPERIAL LABORATORIES
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pay one-fifth of the gross receipts as rent. They provide everything, including their own implements, seed and buildings.

Crops from these tenant-farmed lands reach market during the months of April, May and June. They are sold to truck dealers of Haywards, south of Oakland, and eventually reach the markets of the San Francisco Bay territory. The winter months and the early spring months thus are spent by the tenants in farming their own lands.

CAN WORK IN ORCHARD

When the fruit harvest begins, the tenant farmers are through with work on their leased land and then become available as laborers in the Curtner orchard. For their work in the orchard, or in erection of buildings, fences, etc., they are paid day wages. In this manner, the Curtners have always had on their farm a dependable supply of labor, available at the peak period of the season.

W. W. Curtner states that the system has worked out to mutual advantage of the landlord and the tenant.

Most of the residents of the Warm Springs District in Santa Clara County, largely Portuguese, are former Curtner tenants and are said to have made money on the Curtner farm, thus enabling them to purchase farms for themselves. There are approximately 20 families owning from 10 to 40 acres each, who got their start on the Curtner place.

One of the remarkable things in the arrangement is the relationship between the tenant and the landlord, based on mutual confidence and understanding, and an example of what may be done when human beings have faith in each other.

MAY SELL HOMES

As stated, the tenants own their own places, but all these buildings are on lands owned by the Curtners. The tenant, if he wishes to leave, sells his buildings and equipment to some other prospective tenant approved by the landlord. He has no legal title to this property, however, since it is on Curtner lands. No legal reason exists why the Curtners could not confiscate all of the improvements; yet, there is not a scratch of a pen between them. The obligation is strictly a moral one and always has been lived up to as such.

MANY YEARS ON JOB

Some of the present tenants on the Curtner place have been there for as long as 27 years. There are 17 families in all. In addition to having enough room around each of their farms for gardens, they are allowed to keep two cows, which may be staked out on the hill sides where they do not interfere with growing crops. They also keep chickens and pigs, thus utilizing certain crops which ordinarily go to waste. In this manner, the tenant gets most of his living from his little home place and his leased lands. The money he gets from day work in the Curtner orchard usually goes into his savings account against the time when he may have enough to purchase a farm for himself.

CONFIDENCE THE KEYNOTE

Curtner informed the writer that one man who had left some years back, had on deposit $6000 which he had saved during the time he was a tenant on the place. This money is still in the Curtner account, drawing interest for the former tenant. Sometime he will take it out and buy a farm for himself.

This plan of operating a large diversified farm may give other California farmers an idea helpful in solving their labor problem. Even during the war, when the labor difficulty was most acute, there were enough hands on the Curtner place to harvest all the fruit and at times during the season workers were spared for neighbors who were not so fortunate.

A sure, reliable labor supply at the peak of the season relieves the California fruit grower of one of his most irritating troubles. To solve this difficulty in a big, broad way is well worth while. The Curtner plan is an example of co-operation between owner and worker which not only has proven of material benefit to both, but also has strengthened the faith of all concerned in their fellow men.

American Fruit Growers, Inc., Have Set Up

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In All Their Citrus Packing Houses

Two years' experience has proved that quality fruit, properly identified, commands a premium.

The ultimate consumer "wants to be shown." The fixed policy of only identifying fruit of *"quality"* is producing results.

Identified melons, bearing the *"Blue Goose"* insignia, commanded a premium at once.

Identified fruit is now established.

It will be well for growers of "Quality" fruit to get in touch with *American Fruit Growers, Inc.* and secure the advantages of their splendid national distributing facilities, plus the means of permanently identifying their product.

Watermelons and cantaloupes bearing the *"Blue Goose"* stamp are now in the market.

The Electric Fruit Marking Company has increased its factory to take care of the increased business.

Last season some thirty cars of high grade apples from the Northwest were identified by the electric marking process. This test established beyond all doubt that no injury results from the mechanical marking of apples.

Preparations now are under way to install a number of marking machines in the Northwest, and *"Blue Goose"* apples soon will be as familiar to the consuming public as *"Blue Goose"* oranges and grapefruit.

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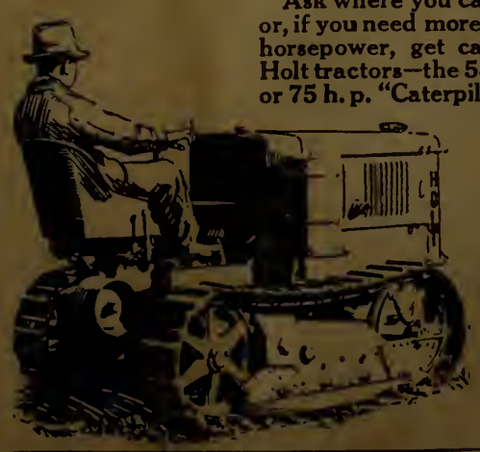
More convincing than anything that may be said about "Caterpillar" T35 Tractor is the evidence of what this tractor is actually doing in service. Study its design and specifications and you will find features of simplicity, superior materials and construction, perfect lubrication, complete enclosure from dust and dirt. Watch its performance in the field and you will see how these features are translated into greater power, amazing economy and enduring service.

Ask where you can see a T35 at work, or, if you need more than its 15 drawbar horsepower, get catalogs on the larger Holt tractors—the 5-Ton, Western 10-Ton or 75 h. p. "Caterpillar" Tractors.



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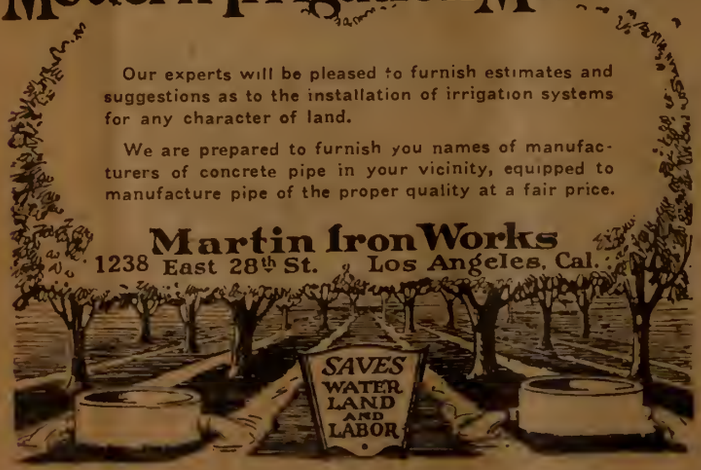

Success With Goats

(Continued From Page 8)

that the pure bred is not a practical dairy animal," asserted Miss Wagner enthusiastically, with each arm encircling the neck of one of her pets.

"There is no cross breeding at Las Cabritas. Pure Toggenburgs for us—hardy, prolific, everlastingly on the job at the milk pail.

"Never have we had to sacrifice beauty in order to get heavy production. We have chosen our bucks for the milk records back of them, yet so strong is the pure Toggenburg type that although we breed strictly for milk, we have never lost a point in beauty of type as our show winnings prove conclusively."

Until two years ago no breeding stock was offered for sale. The young women devoted their entire efforts to building up and increasing their herd. Recently, however, a number of sales have been made which justified the long years of hard work and study on the part of the young women breeders. "Capella 2nd," a 6-quart doe, grand champion of the 1921 State Fair, brought $900 cash, probably the highest actual cash deal ever made in America for a young Toggenburg.

HIGH PRICES RECEIVED

The new catalog recently planned, written and edited by Miss Richards, lists mature does at from $75 to $500, bucks at from $100 to $350 each, goatlings at from $100 to $150 each, and kids at from $25 to $250 each.

The best milk doe now on hand is giving an average of 7½ quarts a day. All of the does show wonderful udder development.

The natural hardiness and longevity of the Toggenburg are preserved and increased at Las Cabritas by the healthful conditions under which the goats are kept. The junior partner, Miss Wagner, is the "herder." With the help of "Bob" a cross bred Shepherd-collie dog, she takes the herd out into the hills, and they spend much of the time upon green pasture. Bob, six years old, is as much a part of the family as a helper, and to the girls he is indispensable. He understands every motion and command and gently but firmly manages the herd with almost human intelligence. Recently when he suffered an accident which imposed a stay at a veterinary hospital, it was necessary to employ a boy to take his place with the goats. Needless to say, Bob is not for sale.

The reader already has seen that

Miss Wagner and Two High-Producing Does

development work and is a regular contributor to goat journals and other publications.

Even seasoned dairymen of the male persuasion, while inclined to regard with humor and patronage an enterprise based upon the little "goat cow," have surrendered to the pleasant personality and business judgment of these remarkable young women and Miss Richards's expressed original views which cannot but appeal to the business man as sound and broad minded.

"Let us not antagonize the dairy industry," she pleads. "We must get upon the same basis as the dairymen and instead of pulling against them work with them as a distinct and necessary, but not conflicting, branch of their industry. The dairymen have built up a great system of wonderful organizations. The goat breeders should cultivate the good will of the dairymen in order to take advantage of this machinery already organized and use it to mutual advantage. There is no reason why the goat industry should damage the cow dairy industry, nor vice versa.

BROADER VISION NEEDED

"Naturally, however, we who have pioneered in this important industry have met with many discouragements, not the least of which has been the apathy and I regret to say, [illegible]

These five does, at the time of this pose, were yielding an aggregate of seven gallons of milk a day, sold (wholesale) for 65 cents a gallon. Their expense for upkeep was 10 cents a day each. No wonder Miss Richards is smiling proudly!

our story deals with young women of more than ordinary business sagacity and intelligence, but they are not satisfied merely with having made a success of their business. Miss Richards particularly, has become recognized as a world authority upon milk goats. She has written the only available complete text book on the subject, prepared at the request of a prominent eastern publisher and already issued in several editions. Moreover, she has served as president of the Central California Milk Goat Breeders' Association, has taken a prominent part in all promotion and

of the farmers and cattle breeders. We on our part, must say less about tuberculosis and more about co-operation, they on the other hand must recognize the goat as an institution which is certain to become increasingly important.

"In fact," Miss Richards continued, "the goat industry has grown so rapidly that already it has [illegible] crisis. We are [illegible] experimental to the practical [illegible] are getting upon [illegible] The past two years have [illegible] not disappointed, and [illegible] to realize that sentimentalism in [illegible]

[illegible] must give way to business principles.

That the young women indeed have arisen to meet changing conditions is indicated by the fact that they no longer have any hesitancy in killing animals that are not profitable.

"When we first commenced raising goats," confessed Miss Wagner, with feminine frankness, "we could not bear to think of sacrificing one of our pets. Now, we do not hesitate a minute in disposing of any animal that is not up to standard."

Practically all of the male kids are destroyed at birth, only the very best being retained, and these being religiously culled.

To many ORCHARD and FARM readers who in common with most farmers have regarded the goat industry as child's play, actual figures concerning its development would seem almost unbelievable. Suffice it to say, that the University of California, College of Agriculture, has given a great deal of attention to goats, established courses in goat raising and issued publications on the subject.

Professors True and Voorhies, together with Dr. Jackley of the State Department of Agriculture, have given much time and thought to the interests of the goat breeder. Two publications on the Pacific Coast are devoted particularly to milk goats and California has come to be recognized as the leading goat State of America.

GROWTH OF INDUSTRY

Hundreds of thousands of dollars are invested in this business and dairy supply companies are manufacturing special separators and equipment for goat farms. Fairs and stock shows are giving much attention to the goat departments. Many so-called "big" farmers, who operate large tracts of land and breed other livestock, are adding goat herds. The animals are clean and pleasing to handle, and because of their loving dispositions and great intelligence, nearly always capture the hearts of their owners, particularly women and children. Many an American family has adopted and showered affection upon a single doe which has saved the life of one of the children and finally become, like the family dog, a pet of priceless value.

The herd at Las Cabritas now is valued at no less than $10,000, while the investment in land and equipment, all paid for and clear, represents at least another $10,000. Yet the writer could not but sense a state of instability in the business of Richards & Wagner. For who can dare predict indefinite endurance of a partnership between two attractive bachelor girls, when even the most iron-clad "bachelor clubs" are recognized as miserable failures?

Even admiring neighbors are not blinded to the discrepancies of the situation.

"It seems a shame," ventured a fatherly old gentleman with twinkling eyes, who with your correspondent was waiting for the bus to return to San Francisco, "that all that affection should be wasted upon *Toggenburg* kids!"

Frost Resistant Olive

THE Arbequina olive is an oil olive, grown largely in the province of Lerida, in the northeast of Spain, particularly in the plain of the Urgel River, where it is in many parts supplanting all other varieties.

It is remarkable for its vigor and resistance to inclement weather. It is particularly hardy and withstands frost that seriously injures other varieties. Its crops are large and regular and the tree commences to bear when very young. The average annual crop is said to be about three tons per acre.

This olive is being introduced in the south of France for trial in districts which are too cold for other varieties.

It might be worth testing for frosty locations in the interior valleys of California and in the coast valleys.—Frederic T. Bioletti, University of California.

Olive plantings in California in 1921 amounted to only 191 acres, the smallest for the recent history of the olive industry in this State. However, now that [illegible] there is again in the [illegible] that more [illegible] in this fruit [illegible] when [illegible] these [illegible]

How Simple to Install the Marvelous Colt "Gas Well"!

HERE is a cross-section of a farm house showing how the pipes carrying that wonderful carbide gas are run to every room from the COLT Lighting and Cooking plant.

Even though no provision was made for piping when the house was built it is a simple matter to pipe it now for Carbide Gas.

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FOR SALE—15 acre improved ranch, 2½ miles south of Coachella on paved highway. Grapes, dates, alfalfa and a variety of other trees and plants growing on place. Price, $7500. Nels P. Rasmussen, Owner, R. F. D. Box 33, Coachella, Calif.

IN FOOTHILLS OF EL CAJON VALLEY, 6½ acres. Excellent soil. Plenty water. Furnished house, garage, corning house, capacity 500. Fruit trees, vineyard. Fred Crawford, R. R. No. 1, El Cajon, Cal.

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WANT to hear from owner having farm for sale; give particulars and lowest price. John J. Black, 110th street, Chippewa Falls, Wisconsin.

I WANT WESTERN FARMS for cash buyers. Will deal with owners only. R. A. McNown, 367 Wilkinson Bldg., Omaha, Neb.

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WANTED To hear from owner of land for sale. O. K. Hawley, Baldwin, Wisconsin.

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TOBACCO—Kentucky's natural leaf, rich, mellow smoking; 10 lbs., $2.25; hand selected chewing, 3 lbs., $1. Free receipt for preparing. Waldrop Bros., Murray, Kentucky.

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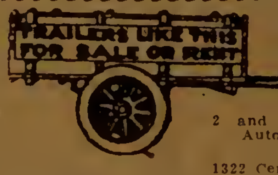

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So confident is Dr. Alexander that his discovery will rid your house, barns and livestock of these pests that he offers to send a $2.00 supply for only $1.00 on the guarantee that if Rid-O-Fly does not solve your fly problems it will cost you nothing. Two big Kansas City Banks guarantee the reliability of this offer.

SEND NO MONEY—just your name and address, and this introductory offer will be mailed at once.

Alexander Laboratories

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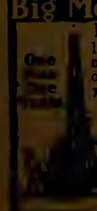

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American Nut Journal

[illegible] Northern Nut [illegible] nut culture [illegible]

Poultry Pointers

By V. O. Hansen

A POULTRY woman who is very successful in brooding, uses the following method in starting chicks: Sand is placed on the floor—preferably beach sand because of the salt in it.

She feeds oatmeal only for the first two weeks, then the best commercial chick feed on the market. For a drink, she gives 1 drop of lysol in a cup of water, and claims this almost entirely prevents bowel trouble.

She says the beach sand also is valuable in starting turkey poults.

Later, she separates the young birds that are slow in feathering and feeds them a mash containing white of eggs. She claims that the white of eggs grows the feathers, and the yolk develops meat. Thus Leghorn breeders could do well feeding egg yolks to starting chicks—which "all go to feathers."

A hatchery man grinds the unhatched eggs and chicks that die in the shell and mixes in a mash for chickens, ducks, geese, and turkeys. He says the best egg making food is eggs.

In selecting Ancona chicks, some assert the "brown backs" are the result of foreign blood, and may lay tinted eggs. Again, others prefer these "brown backs," as having greater vitality.

Cleaning Milking Machines

THE following suggestions for cleaning milking machines were prepared by Dr. A. F. Hanna, Field Veterinarian for the California Department of Agriculture:

1. When through milking run warm water through tubes.
2. Thoroughly brush with hot water and washing compound all parts with which the milk comes in contact.
3. Place tubes, etc., in water which has reached the boiling point and permit them to remain there in for 30 to 60 minutes. Do not resort to further boiling.
4. Place tubes, etc., in brine and chloride of lime solution and drain three to five minutes before the next milking period. They will then be ready for use.

Small top pails are used for stripping the cows.

The four main points (1, 2, 3 and 4) are observed daily in the morning, and only the third point is omitted in the evening.

The brine and chloride solution is made as follows: Five gallons saturated solution of sodium chloride to which is added a twelve-ounce can of ordinary household chloride of lime. To keep this up to strength, a stock solution is made by dissolving a twelve-ounce can of chloride of lime in one gallon of water and adding one quart of the stock solution to the bath each week.

"ARO" TRACTOR

3 H. P. at the Drawbar.
6 H. P. at the Belt.

It Does the Work
You Can Depend on It

E. I. CROOK, Distributor,
417 W. PICO, LOS ANGELES

Vim Vigor Vitality — **Nu Life Gland Tablets** — Youth Health Strength

Absolutely Guaranteed.
Send for free pamphlet

For Sale Only by the Stanton Laboratory, 279 5th Ave., San Francisco. Price $3.00. Sent postpaid, under plain cover, on receipt of money order, or your check is good

There is a size and style of De Laval Separator for you, no matter if you have one or a thousand cows.

De Laval Separators are furnished with hand, electric, steam turbine or belt drives, for any kind of power.

Don't Let This Happen to You

"Last week we replaced a machine made by ..... which had been used only five years. Our customer, Mr. Crawford Cook, living near Foyil, Oklahoma, shipped one can of cream from ..... and then one from the De Laval, and changed about in this manner for four weeks, the result being that the De Laval got him exactly two pounds more butter-fat per day, and he is milking 12 cows. This amount at 35c per pound makes 70c per day, or $255.50 per year, more than twice as much as the new De Laval was worth. Mr. Cook said we could use his name and this information, and if they didn't believe it, he would make an affidavit to that effect."

This was taken from a letter from one of our agents, but there is nothing unusual about it. We are constantly receiving letters of a similar character from people who say they waited too long before buying a De Laval.

On hundreds of thousands of farms today there is an enormous amount of butter-fat being wasted by inferior or worn-out separators and by hand skimming. Perhaps such waste is going on right on your farm. Stop it at once by getting a new De Laval. It is not only the world's best cream saver, but lasts longer and is easier to clean and turn than any other.

Call up your De Laval Agent today and ask him to bring out a new De Laval so that you can try it, or write us for full information. Sold on such easy terms that it will pay for itself while you are using it.

De Laval Pacific Company
61 BEALE STREET SAN FRANCISCO

Sooner or later you will use a De Laval Cream Separator and Milker

MAIL ORDERS FILLED QUICK
(Send for our Folder)
BROADWAY ARMY SALVAGE STORE
320 So. Broadway, Los Angeles, Cal.
DEPT. O

U. S. Army Shelter Tents

These are regulation U. S. Army reclaimed Shelter Tents; 6 ft. wide and 7 ft. long. Can be rolled up and carried under arm.

$1.25

COMPLETE STOCK OF TENTS, CAMP FURNITURE AND HIKING APPAREL

FRUIT TREES

Write for Price List!

THE FRESNO NURSERY CO.
FRESNO, CALIFORNIA

IF YOUR VETERINARIAN Uses "Cutter's" Hog Cholera Serum and Virus you can count on protection against Hog Cholera. The first clear refined Hog Cholera Serum

The Cutter Laboratory
"The Laboratory that Knows How"
Berkeley (U.S. License) California

$5400 FROM 4 ACRES RHUBARB

Last season. Big returns first season.
Plant Now. Circular FREE.
W. A. LEE, Covina, Cal.

Only one-fifth of the buildings owned by the Bell System are shown in this picture.

A Telephone City

Above is an imaginary city, made by grouping together *one-fifth* of the buildings owned by the Bell System, and used in telephone service. Picture to yourself a city *five times* as great and you will have an idea of the amount of real estate owned by the Bell System throughout the country.

If all these buildings were grouped together, they would make a business community with 400 more buildings than the total number of office buildings in New York City, as classified by the Department of Taxes and Assessments.

Next to its investment in modern telephone equipment, the largest investment of the Bell System is in its 1,600 modern buildings, with a value of $144,000,000. Ranging in size from twenty-seven stories down to one-story, they are used principally as executive offices, central offices, storehouses and garages. The modern construction of most of the buildings is indicated by the fact that the investment in buildings is now over three times what it was ten years ago.

Every building owned by the Bell System must be so constructed and so situated as to serve with efficiency the telephone public in each locality, and to be a sound investment for future requirements.

"BELL SYSTEM"

AMERICAN TELEPHONE AND TELEGRAPH COMPANY

AND ASSOCIATED COMPANIES

One Policy, One System, Universal Service, and all directed toward Better Service

POULTRYMEN, ATTENTION!

Government experiments showed amazing increase in egg production through feeding animal products.

HAUSER'S *(High Protein)* MEAT SCRAPS and GREEN BONE

Will Make YOUR Hens More Profitable.

Mail Orders Filled Promptly
Write for Information Today

Hauser Packing Co.

Los Angeles, Cal.

WAGNER'S GIANT WINTER RHUBARB

Plant now for February's high-priced market. Should return up to $1000 per acre first year. The California Rhubarb Association could have used the output of 1000 acres this season.

WAGNER'S NURSERY (J. B. Wagner & Son) "Originators of the Giant Winter Strain"

1550 East Villa Street Dept. "O" Pasadena, California

HELPFUL HINTS for THE HOUSEWIFE

Edited by Isabel Sinclair

Here Are Some "Don'ts" for the Cook

"Aunt Chloe," a very successful colored cook of the old school, used to say: "It ain't so much knowin' what TO do as what NOT to do." At any rate, here are some negative, as well as positive, suggestions prepared by a home economics field worker, based on observation as well as theory.—I. S.)

I. Protein foods should not be cooked at high temperature.

(a) Egg and milk if boiled will curdle.

(b) Boiled milk loses its value as a bone-building product

(c) A longer time is required to digest fried or "hard-boiled" eggs, which therefore are not suitable for persons who have weak digestion or for small children. Eggs become firm at 160 degrees F., while the boiling point of water is 212 degrees F. Eggs cooked below the boiling point will be firm without being tough.

(d) Cook steak quickly if you wish it tender and juicy.

(e) Cottage cheese is made tough by cooking at high temperature. It should be grated before serving.

II. Tea to be iced should not be allowed to remain on the leaves, as the tannin, which is injurious, is withdrawn. Tea should be steeped, not boiled.

III. Boil coffee only three to five minutes and remove the grounds when reheating. This insures good coffee, without the presence of caffeine or tannin, which are injurious.

IV. Chocolate or cocoa should be cooked five minutes before being added to the milk.

V. For frying, don't use butter or other fat that has become dark from frying, as this is injurious to the digestive system.

PLANNING MEALS

VI. Don't serve half-cooked cake or bread. This is hard to digest, as it becomes compact while being masticated.

VII. Serve sweet foods in regulated quantities.

VIII. Be sure to have variety. The following items should not be served at the same meal: (a) Beef, egg, chicken, peanuts; (b) pork, large serving of salad dressing pie and doughnuts, (c) rice, potatoes, macaroni; (d) greens, lettuce, cabbage; (e) dried fresh and canned fruits.

IX. Also use judgment in serving. Don't serve together, (a) tomato soup, tomato sauce, tomato salad; (b) stewed prunes and prune whip; (c) roast beef, beef salad; (d) mashed potatoes and potato salad.

X. Too many foods such as sweet potatoes, cheese, pies and rich desserts served at the same meal are easily assimilated by the body and may cause constipation.

XI. Starchy vegetables should not be boiled longer than to finish cooking.

XII. Boil green vegetables in small amount of water to conserve minerals.

XIII. Sugar should not be added to acid fruits while cooking. It will take less to sweeten if added later, the fruit being heated only sufficiently to melt the sugar.

How I Made Twenty-five Dollars With Thirty Cents Worth of Paint

MY HUSBAND paused on the back porch and studied our somewhat delapidated refrigerator.

"Dolly," he said, "this ice box is a disgrace. We must get rid of it and buy a new one. It is so scratched and marred I am ashamed of it. Furthermore, I think it is becoming unsanitary."

I agreed with him, but could not reconcile myself to add this expense to my household budget, especially when I had almost achieved my ambition to acquire that wonderful set of Haviland that I had coveted for so long.

Right then I had an idea. I had never done any painting, but it occurred to me I could fix up that old refrigerator and make it do for several years.

I invested in a small can of white enamel and found in the shed a little varnish we had left over when we had our floors refinished. There was a little brush with the varnish which I managed to clean with gasoline, soap and water.

I dusted the box with a stiff brush, and it required just 30 minutes to cover it with the varnish. The next morning it was dry, and I hardly recognized it, so bright and shiny did it look. I was delighted to find how easily I could paint. I love to do it!

Now, previously I had scrubbed out the ice and food compartments and set the box in the sun to dry. I enameled the interior and soon it was glistening with its new white coat. I set it aside for two days; then next morning proudly conducted John to the rear porch to display my handiwork.

"Dolly," you're a wonder!" he cried enthusiastically.

"How much did I save?" I inquired.

"Well," he answered, "the old relic was worth about $5 second hand, and a new one would have cost at least $30."

That's the whole story, except that I shall serve dinner Sunday when John's parents visit us upon my brand new Haviland set!—Mrs. J. Munsey, Fresno County.

Here Are Winners in "Pin Money" Contest

ALTHOUGH space is not available this month for publication of the many interesting letters received in ORCHARD and FARM'S latest contest for women readers, we hope to publish at least the first, second and third prize letters in the August issue.

Our subscribers may look forward with anticipation to the reading of these helpful letters, for almost every woman is interested in a method of obtaining extra pin money for the hundred and one little things she needs. And a number of unique plans are suggested.

Here, then, are the fortunate subscribers:

FIRST PRIZE, $10.00—Mrs. H. M. Smith, Fairoaks, Cal.
SECOND PRIZE, $5.00—Miss E. Stevenson, Van Nuys, Cal.
THIRD PRIZE, $3.00—Mrs. F. G. Brown, Sierra Madre.

Three Equal Prizes
$2.00—Mrs. Emma J. Torbert, Stockton, Calif.
$2.00—Mrs. J. Emerson, Auburn, Calif.
$2.00—Mrs. Emma Smith, Millville, Calif.

Four Equal Prizes
$1.00—Miss Ida I. Hill, Tuolomne, Calif.
$1.00—Mrs. Geo. A. Enos, Morro, Calif.
$1.00—Mrs. Leon Root Long, Healdsburg, Calif.
$1.00—Mrs. M. Merkel, San Francisco, Calif.

Watch for announcement of another interesting contest soon! Checks are being mailed to the fortunate winners above.

YOUR GARDEN of FLOWERS

by Helen Temple

Rooting From Layers

"NOW just what does this mean?" I can see some of my readers wrinkling their foreheads over the term used in my June article, "Rooting From Layers."

It is not a complicated process. In fact, when we wish to replenish stocks with the least possible outlay of money and time, it is one of the most satisfactory and easy methods of propagation.

Helen Temple

Many plants such as the carnation and a number of our vines, are easily propagated in this manner. Quite often a gardener will create new plants by loosening a healthy runner of a vine, laying it down smoothly in a desired location (leaving it attached to the main plant), then pressing into the soil "knobs" under each of the little stemlet groups.

They must be pressed very firmly into the soil to keep them in place. I have used wire hairpins on either side of the stemlet group to hold them in place. The pins should be pushed into the soil as far as possible without binding the runner. This method of layering is quite successful with the common vines.

THE SUREST METHOD

The surest method, however, requires a little more work, but is advised when rooting carnations from layers. This involves the use of a knife. With the knife remove the bark and any leaves or stems growing on the lower side of the layer or runner; then press this into a shallow trench, leaving the upper side of the layer and leaves exposed. This method is quite successful with any of the plant life that sends out long, slender stems or runners.

When the layer or runner establishes roots of its own, cut it from the main plant. If the runner has several "baby" plants attached to it, cut the stem between each of them, thus allowing them to become individual plants. Soon these "youngsters" are ready for a home of their own, and may be transplanted.

Rooting from layers is considered by many gardeners easier than the use of cuttings. Personally I prefer the cuttings, but often we try, without success, to root from cuttings some of the rare plants. The cutting frequently does not carry enough strength to furnish rootlets, but the layer will root while still attached to the parent plant, if the latter is in a good, vigorous growing condition.

Popular Climbing Roses

THE climbing American Beauty has become very popular during the past few years. It blooms throughout the season and is the same color and [illegible] as the bush American Beauty. As a red rose climber, this one will give the effect desired by those who want the dark red and green. Do not plant the American Beauty against a yellow or yellow-cream house. The effect is inappropriate, to say the least. A red rose climber is most effective when against a white house. Other good red roses are the Crimson Rambler, Red Dorothy Perkins, Prairie Queen, American Pillar, Climbing Gruss an Teplitz, Flower of Fairfield and [illegible]. Almost all of these varieties are to be purchased through ORCHARD and FARM advertisers.

The Yellow Climbers are favorites [illegible] Climbers, Kaiserin [illegible], Albertine Barbier, [illegible] Carmine [illegible] Golden Orbir. [illegible] as the red, white or pink climbers.

Quite often I have heard the expression, "Yellow roses are not as hardy as the red ones." I think I have seen as many yellow climbers in Southern California as reds and whites. They are effective with almost any color as a background, but especially against the darker colors. The yellow roses are beautiful when combined with honeysuckle as a covering for a large porch or an arbor.

Our Gardens in July

IN July we are obliged to irrigate and cultivate and repeat the process often. In the interior, this process must be carried on much more frequently than on the Coast, where we have summer fogs. Lawns need an extra amount of clipping and sprinkling this month. Roses should be "rested." Climbers may be pruned quite heavily if necessary.

It is too late for bulb planting, but stocks, pansies, cosmos, antirrhinum, lobelia and centaurea may be sown for late transplanting on the Coast and in mild interior regions.

That Mrs. Temple is equally proficient in raising beautiful flowers and beautiful children is shown by the above illustration of the "Three Little Temples," near a jasmine bush started from a cutting secured from Georgia 12 years ago. The jasmine has blossomed profusely in Ventura County each season.

All seedlings that can possibly be transplanted should be rushed into the ground where they will be protected. The seedling flats must be kept very moist and shaded during a part of the day. The transplanting of seedlings before the real summer days is always advisable, unless they are small enough to carry over until fall.

In the interior sections, July is not a good month to plant and transplant, unless one is setting out sturdy plants on their own roots. Even then, protection is needed. On the Coast, the garden routine is scarcely varied throughout the year, but in the semi-tropical regions even those near the Coast, sometimes we experience rather warm days.

Here the planting is almost the same, with the exception that one must not expect a so-called "cool" crop to succeed during the summer.

None Better—I want ORCHARD and FARM as long as I live, as I am sure there is no better paper on earth for this purpose.—G. Noschka, San Diego, Calif.

Growing Better—Your paper seems to be getting more interesting and full of news every issue.—Chas A. Templeton, Orland, Calif.

Universal Brand Sprays

Will Control Citrus Pests

You can depend upon Universal Brand Sprays. Your use of them in combating Red Spider, Citricola and Black Scale will convince you of their prompt effectiveness and marked economy.

What is more—Universal Brand Sprays stimulate the trees and increase their resistance to the climatic conditions, thereby setting a good crop of fruit.

Right now is the time to use the following spray:

B. T. S., 15 lbs. TRIUMPH 1½ to 2½ gals. K-seen GLUE, 1 lb. (For citricola and black scale)	PER 200 GAL. TANK	B. T. S., 12 lbs. TRIUMPH, 1 gal. K-seen GLUE, 1 lb. (For Red Spiders)

4 gals. lime sulphur solution can be substituted for the above B. T. S. dosage.
(patented formulas)

Remember that Mr. Herbert, our assistant entomologist, is ready to inspect your trees and give specific advice relative to spraying. Call on him at our Los Angeles office.

Insecticide Department

Balfour, Guthrie & Company

Paul R. Jones, Entomologist

Los Angeles — **H. W. Hellman Bldg.**
San Francisco — **Balfour Building**

Buy direct from manufacturer and save 50 per cent. We pay freight on PAINTS, WALLBOARD, ROOFING, WINDOW SHADES, WIRE SCREEN, BARB WIRE, WALLPAPER, ELECTRIC FIXTURES, WIRE, ETC., to any railroad point. Write today for samples of ROOFING, WALLPAPER, COLOR CARDS and FREE information how to paint, stain, paper your home. TELL US WHAT YOU DESIRE in our line; we will do the rest. WRITE, PHONE OR CALL FOR FREE INFORMATION.

WESTERN WHOLESALE PAINT CO.
LOS ANGELES, CAL.
Bdwy. 5173. 708 East 8th St.

Announcing a Photograph Contest for Our Young People

HOW many of our boys and girls have cameras and like to take pictures? We believe there are many who understand and enjoy photography; therefore, we shall offer an attractive series of cash prizes for photographs submitted before July 20.

We want pictures of any interesting subject actually taken by our boys and girls, but not necessarily developed and printed at home.

The judges will include our Art Editor, who will study the pictures from the viewpoint of composition and artistic effect, one of the ORCHARD and FARM staff photographers, who will judge the technical points (that is, exposure and clearness of the negative); the Editor of ORCHARD and FARM, and the Household Editor.

Here Are the Prizes:

For the best photograph . . . $2.00
Second prize 1.00
Third prize 75
Fourth prize 50
Five prizes, 25 cents each.

The best photo submitted will be published in an early number, together with the names and addresses of winners.

NOTE THESE SIMPLE RULES:

No portrait or professional photograph will be considered.

The size is of no consequence if the picture is clear, although vest pocket negatives should be enlarged in order to make the work of the judges easier.

Animals, children and every-day home scenes make good subjects.

Some contestants no doubt will submit landscapes or water views; perhaps others will pose special pictures having a humorous or news value. Others may simply send photographs already on hand, selecting the best from their albums.

Every entry must come from the family of a subscriber; that is, some member of the family must take ORCHARD and FARM regularly. If not already a subscriber, you may enter by sending one subscription in your name or that of a relative.

Pictures should not be mounted on cardboard, but in mailing it is a good idea to include a little piece of cardboard in the envelope to prevent folding or breaking.

We should be glad to have the film as well as the print of each picture, and will return the film if desired. The film, however, is not required. No prints will be returned.

NO TIME TO LOSE

This is the best season for taking pictures—during the long, bright summer days. Don't delay in sending in your entry. Many ORCHARD and FARM young folks are going to receive these cash prizes. Will you be one of them? Act quickly. It is not long until July 20, and no entry will be considered which is not postmarked on or before this date. Address The Editor ORCHARD and FARM, 1111 South Broadway, Los Angeles.

Change of Price

REFERRING to the advertisement of the Torrance Lime & Fertilizer Company, appearing on page 12 of this issue: After this "ad" was inserted, the price of "D. M. S." lime fertilizer was reduced from $4.50 to $4.00 a ton, according to S. Maus Purple, General and Sales Manager.

Co-incident with the announcement of the new price, Mr. Purple revealed the plan of the company to sell the material entirely on an analysis basis.

The initials "D. M. S." indicate "decomposed marine shell," a unique deposit of age-old bones and marine life at Torrance, near Los Angeles Harbor.

Hundreds of tons of this material have been applied to California fields and orchards to improve the condition of the soil, to correct acidity, and to fertilize trees and plants.

New Hay Harvester

(Continued from Page 7)

to insert and tie wires.

The hay is loaded by means of an endless carrier similar to the ordinary hay loader used with wagons. From this carrier it is dropped into a hopper which delivers it to a pre-compressor. This device compresses the charge before it is struck by the baling plunger.

A unique feature is a finger feed which gathers the hay as it is dropped from the hopper and carries it to the pre-compressor.

The machine is equipped with wide-rimmed wheels, the drive wheels being fitted with grouters which may be covered with a smooth metal band for road work. In moving on the road the loader is detached and hitched to the rear.

A company has been formed to manufacture the machines in Los Angeles. G. G. Bennett, the designer, is president; E. H. Hess, secretary and treasurer; E. M. Hamilton, engineer, and Bert Hobson, sales manager.

These men have incorporated The Common Sense Farm Machinery Company, which expects to develop an important new local industry based upon this product of local genius.

Citrus Topics

(Continued from Page 12)

remain dormant during the winter and be forced out the next spring by cutting off the tops of the new shoots.

In all cases, frequent disinfection should be practiced. In order to have more reliable information as to the best treatments to be used after future freezes, the Agricultural Extension Service for Los Angeles County has started a test with a plot of 90 trees in a young orange grove on the Azusa Foothill Citrus Company ranch. Mr. M. B. Rounds for the ranch and the writer for the Agricultural Extension Service are carrying on the tests. Several methods of treatment are being tried out.

Sunflowers

Pork Barrel Politics?

"Mrs. Jones, kin Johnny go with us to see Elihu root?"

"Why, I didn't know he was to be in town."

"Whatcha mean, in town' Elihu's our big red hawg!"

An Effective Weapon

"Well, Pat, I suppose you have learned that it's dangerous to pick a quarrel?"

"Sure, I have that," agreed Pat feelingly, readjusting his bandages. "But it's even more dangerous to quarrel with a pick."

Modern Style

Tailor (measuring for suit)—"And how will you have the hip pockets, sir?"

"Right for revolver, left for flask."

AT LAST—
THE ULTIMATE HAY HARVESTER

An Achievement of Notional Consequence

THE ANSWER
to
THE FARMER'S PRAYER

Means the Evolution of the Hay Industry

THE BENNETT HAY HARVESTER

Travels on its own power. Gathers and bales the hay from swath or windrow in

ONE OPERATION

A complete unit in itself—no horses, no pitchforks, no hard labor

Ask about the unparalleled opportunity now being offered to investors.

Common Sense Farm Machinery Co.

Phone 824-844. 3rd and Main St.
519-20 Roberts Bldg. Los Angeles, Cal.

Through for the day

Your day's work is shortened and made easier when you have a good oil cookstove. Burn Pearl Oil for fuel and you no longer have coal and wood to carry or ashes to shovel out.

You work with a clean *controlled* heat that is concentrated directly under the utensil where it is needed—and your kitchen is kept cool and free from dirt.

Pearl Oil is the clean-burning, uniform, economical kerosene—refined and re-refined by a special process.

Dealers everywhere. Order by name—Pearl Oil.

STANDARD OIL COMPANY
(California)

PEARL OIL
(KEROSENE)
HEAT AND LIGHT

STANDARD OIL COMPANY (California)

Real Stories About Real People

ORCHARD and FARM believes its readers like human interest rather than cold science; stories of actual accomplishments rather than long winded accounts of untried theories.

Because it publishes more "real stories about real people" than any other western farm journal, it has been said of ORCHARD and FARM that "every page is vividly alive."

Such articles are not the easiest to secure, but ORCHARD and FARM spares no expense in creating that desirable quality known as "reader-interest."

If you like ORCHARD and FARM, send us the names of friends to whom you think it would be equally interesting. We shall be glad to mail them sample copies. Address

ORCHARD and FARM
1111 South Broadway
Los Angeles, Calif.

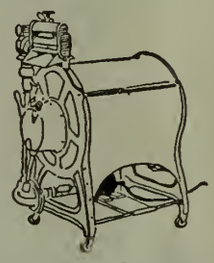
For the women on ranches who must feed hungry harvest crews this summer:

Electrical Kitchen Appliances are "Labor Savers"

HUNGRY CREWS, coming from the fields, require great quantities and a large variety of food. Before the dishes can be washed and put away, it is time to start preparing the next meal.

The housewife who faces such a task needs "Pacific Service" back of labor-saving, electrical kitchen appliances. She needs an electric range to enable her to prepare the great quantities and variety of food that the hungry harvest crews must have. She needs an electrical bread mixer to handle that heavy task, while she takes her dishes, all clean and drained, from the electric dish washer. An electric churn should be working, while she feeds clothes rapidly into her electric ironer. The electric water heater, ice box, cream separator, bottle washer, sewing machine and vacuum cleaner are other electrical appliances that are great "labor savers" for housewives on ranches.

Electric Dish Washer



Electric Washing Machine

All of these appliances and many others can be operated wherever the local distributing lines of the P G and E run. Every farm woman should investigate their labor-saving possibilities.

Call at the P G and E office the next time you are in town and ask for further information.

PACIFIC GAS AND ELECTRIC COMPANY

P · G · and E ·

"PACIFIC SERVICE"

P-05:7-5 Farm

AN EXCLUSIVE AND IMMENSELY POPULAR FEATURE

of ORCHARD and FARM are the contributions of GEORGE P. WELDON, a noted horticultural authority who discusses each month topics of timely and practical interest to fruit growers.

Mr. Weldon also answers, free of charge, horticultural questions of subscribers.

Remember, Weldon writes for no other farm journal. You get this valuable service only through

ORCHARD and FARM

Every Poultryman

FINDS THIS "PAY-STREAK" SOONER OR LATER

EVERY good hen is a mine—a golden mine of eggs. This mine will yield a certain revenue even if you go at it hit-or-miss. But, you can never expect to get the greatest yield—to strike the real "pay-streak"—until you tap the right vein. *And that's feed!*

No matter how carefully selected your stock may be—no matter how good the housing and care you give them—sooner or later you will "dig down" to this rock-bottom fact: feed is the nub and the rub of the situation.

Even the big poultry operators who have been mixing their own feeds and have switched to SURELAY will tell you it's the "cheapest" feed in the long run—cheapest because it nets *more* egg-money in return for the feed-money it costs.

These seasoned poultrymen realize—as you must—that a hen uses more energy in converting poor feed into money than she does in converting good feed into money. And, at that, how little is the difference in cost between good feed and poor feed! But look at the difference in the egg-sheet when you're through!

SURELAY has helped to put many a poultryman on his profit-feet by proving two things to him: First—that cheap feeds lessen the profits of every hen in his flock; second—that our large scale production enables us to turn out a better and more economical feed than he could hope to.

Blended and balanced according to a true-to-test formula, SURELAY stands top-high as a uniform egg mash that will make your hens pay by making them lay. The best way is the find-out-way. Order a sack of SURELAY from your dealer—and see! See how this high-grade mash "assays" in feed value. See how our daily laboratory tests insure the same feed value every time. See how SURELAY actually "pans out" with your flock. See how it rids your mind of feed-worry for all time. For "what's on the tag is in the bag"—always!

Also, send for the new edition of our booklet, "Makes Hens Happy." It is by far the most complete and helpful book we have ever issued on poultry feeding. And it's free! Simply clip the coupon—and mail today!

SURELAY

"A Sperry Product"

POULTRY & STOCK FEED DEPT.

SPERRY FLOUR CO.

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Please send me, without obligation, your new booklet, "Makes Hens Happy."

Name _____

Address _____

SPERRY PRODUCTS IN EVERY HOME SPERRY FLOUR

ORCHARD and FARM

AUGUST, 1922

ESTABLISHED 1888
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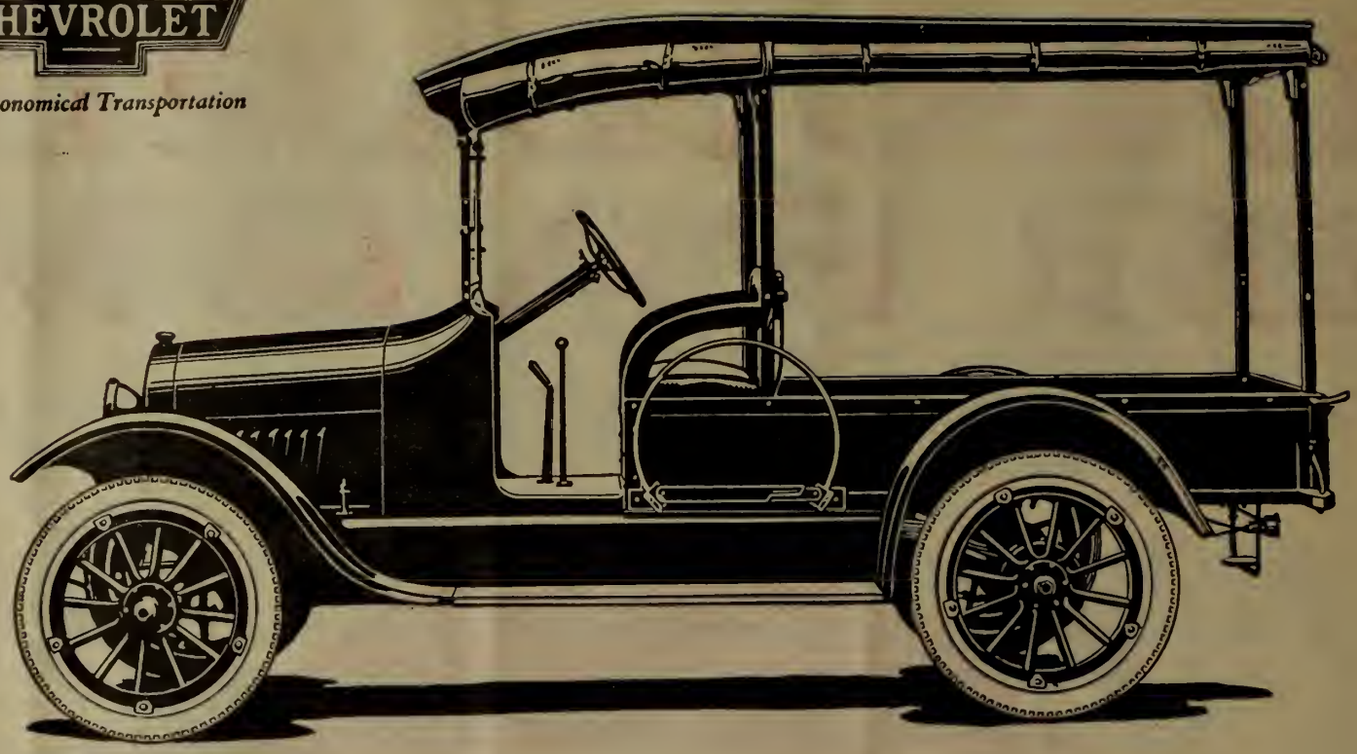
Offices: Los Angeles and San Francisco

TEN CENTS

THIS MONTH—MANY TRUE STORIES OF SUCCESS

CHEVROLET

For Economical Transportation



The World's Lowest Priced FULLY EQUIPPED Light Delivery Car

$525 *f. o. b. Flint, Mich.*

Complete with Body, as illustrated

The Greatest Dollar Value in the Commercial Car Market

Every farm needs this car to carry milk, garden truck, feed and all moderate loads.

Every country merchant needs it to enlarge his trading territory and give better service to customers.

Costs no more to buy and keep than a team but does the work of two teams and saves one driver.

With two extra seats makes a fine bus or jitney for livery, hotel or school uses.

Can be had with special panel body at very reasonable cost.

Chevrolet Invites Comparison Because Comparisons Sell Chevrolet

Consider What Chevrolet Equipment Means:

Standard Rear Axle Construction. The new Superior Chevrolet has the strong, quiet Spiral Bevel Gear Axle that "stands the gaff" without breaking.

Standard Transmission—three speeds forward and one reverse.

Standard Braking System—foot service brake, hand emergency brake.

Standard Electrical System: Starter, storage battery, Remy ignition, electric lights front and rear, on battery circuit.

Standard Cooling System—pump circulation, large, honeycomb radiator and fan. This means a cool, efficient engine, saving gasoline and oil and ensuring driving comfort.

Standard Instrument Board, containing speedometer, ammeter, oil pressure gauge, lighting and starting switch, and choke pull.

Standard Type of Carburetor, with exhaust heater—one reason why you get most miles per gallon of gasoline with a Chevrolet.

Powerful, Valve-in-Head Motor. The same type as used in successful cars selling at much higher prices.

Demountable Rims—extra rim on side. No trouble to change tires on a Chevrolet.

Full Weather Protection—Waterproof curtains let down on sides and rear, fully protecting driver and load against rain or snow. Flexible windows in curtains.

Many Other Advantages which will be noticed on inspection, comparison and demonstration.

Investigate the Difference Before You Buy

Chevrolet Motor Company, Detroit, Michigan

Division of General Motors Corporation

World's Largest Manufacturer of Low Priced Fully Equipped Automobiles

5,000 Dealers and Service Stations Throughout the World

Applications will be considered from High Grade Dealers in Territories not Adequately Covered

Dealer Inquiries Should be addressed:

Chevrolet Motor Company of California, Oakland, California.

OUR EDITORIAL POLICY

ORCHARD and FARM is a magazine of, by and for agricultural people. We believe that to the tiller of the soil is due the best that life affords. We believe that he is the bulwark of the Nation. We honor him as the basic producer. His problems are our problems; his triumphs, our triumphs; his joys and sorrows, ours. To record his achievements and expose the duplicity of his enemies; to fight for and with him; to give him genuine help and practical information, to assist, entertain and inspire every member of his happy household—that is the policy of ORCHARD and FARM.

ORCHARD and FARM

ESTABLISHED 1888

Published Monthly by Country Life Publishing Company
1111 South Broadway, Los Angeles, California
"THE SILENT PARTNER OF THE SUCCESSFUL FARMER"

YOUR QUESTIONS ANSWERED

ORCHARD and FARM is an institution of service. Subscribers may receive free of charge answers to questions upon any agricultural subject. Through its large staff of specialists, and its close contact with authentic sources of information, this magazine is able and willing to serve any subscriber who requires aid or information. Be sure to write name plainly and to give complete address, including street, R. F. D., or box number.

VOL. XXXIV Entered July 16, 1917, as second class matter at the Post Office of Los Angeles, California, under act of Congress of March 3rd, 1879. Subscription price, $1 a year. NO. 8

Pithy Paragraphs

Perhaps sentiment and business don't mix, but we've always felt a little safer in dealing with the man who pensions his old horses.

True, the grain gambler deals in "futures," but so does the preacher.

Man should profit by his failures. Ask almost any clothing merchant.

The German will make his *mark*—as long as the printing press and the paper supply hold out.

It has been suggested that there were less accidents in the old horse-and-buggy days because the driver did not depend entirely upon his own intelligence.

At last Aunt Sarah is forced to confess her need of eyeglasses. She tried to boil the china nest egg.

A lot of folks are so interested in classifying the faults of their neighbors, they look right over the trash piles in their own back yards.

We shall all have our innings in the game of life when there are less errors and more assists.

If an annual culling is good for the poultry, why wouldn't it improve the average man's flock of habits?

A wee bit of gossip may lead to a fracas. The things we *don't* say can make us or break us.

Have you examined recently the orange mailing label attached to your copy of ORCHARD and FARM? Each subscriber is urged to note expiration date printed upon this label and to advise us in case of error. It is best to renew subscription well in advance. All subscriptions so renewed are extended from date of expiration, and the reader thus is assured of uninterrupted delivery. Ask for circular describing money-saving magazine "clubbing" offers.

Cordially,

Jas. C. Knollin

Editor.

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Are You the Man Who "Never Reads Advertisements"?

SOME men, who are neither blind nor illiterate, claim sincerely that they "never read advertisements."

Yet, if you could investigate in each case you would find that the man who "never heads advertisements" uses an advertised tooth paste or shaving cream or soap. If he owns an automobile it will be an advertised car. If you ask his opinion of any automobile he will reply in words that might have been lifted bodily from an advertisement of that automobile.

Advertising has formed his opinions to a great degree. He may have received his information through others who obtained their knowledge from advertising even if he does say he "never reads advertisements."

Not one of us ever reasoned out entirely from his own mind that the earth is round. If we had not read it or heard it we would never have known it.

In these days of good, truthful, helpful advertising to say "I never read advertisements" is merely your way of saying, "I don't read all advertisements."

ORCHARD and FARM is famed, not only for its "regular" advertising, but also for the exclusive, new announcements, which find their origin in this publication. Modern ads are "as newsy as news," and until you've read them you haven't read the magazine. You are invited to use the convenient index below. It is published each month for the convenience of our subscribers.

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Confidential Chat

The September number of ORCHARD and FARM will be one of the most interesting, attractive and unique we have ever published—a surprise for our subscribers. In addition to a beautiful cover design in four colors, there will be——but "that's telling," as the youngsters say! Watch for the "best yet."

This man is said to know more about pigeons than any other person in California. At any rate he owns and operates the largest and most complete squab ranch in the world, and has made a great deal of money from his enterprise.

His name is T. E. Berry, and he will tell ORCHARD and FARM readers the secrets of his success. The first of a series of articles by Mr. Berry appears on page 20 of this number.

France has sent us many of her sons who have become good and successful American citizens. Joe Miramon, whose story is told in this issue of ORCHARD and FARM, came to California with little but a sunny disposition and willingness to work and learn. That was 17 years ago, and now—but turn to page 6 and read how Miramon has attained success "by the milk lamb route."

Do you know that ORCHARD and FARM publishes more illustrations than all other California farm journals combined, and more than any other farm journal in the West? Pictures and "cuts" cost money. ORCHARD and FARM does not spare expense in giving its readers the best.

A BAD ACTOR

"Your mule, Sambo, seems to be a bit fractious."

"Yassah. Dis mohnin' he fractured de bahn doah, an' last night he come mighty nigh fracturin' muh skull! Ah'll say he's fractious!"

If you feel you "have a kick coming" in connection with the delivery of your copy of ORCHARD and FARM, please notify us immediately. The subscription department is ever alert to keep the big ORCHARD and FARM mailing list revised and up to date. Every subscriber must receive all copies, without a break. In case of non-delivery, don't tell others, tell us! "Let's co-operate."

ARE YOU MOVING?

In order to insure uninterrupted service, subscribers are requested to notify us of change of address 30 days in advance.

Always give the OLD as well as the NEW address.

Please attach to your letter orange mailing label from your latest copy.

THE REASON WHY—

California will supply the world's requirements for fruit food

Facts compiled from U. S. Government reports which prove that California is rapidly becoming the World's source of supply for fruit food.

By J. E. BERGTHOLDT Secretary and Manager of Silva-Bergtholdt Company, Nurserymen, and one of California's most extensive growers of fruit.

The First of a Series of Three Vital Messages to Fruit Growers

EVERY PRODUCER has vivid recollections of the slump in the price of farm commodities during the fall of 1920. It is easy to remember how we entered the spring of 1921 with warehouses filled with the carry-over of the previous season's pack of dried and canned fruit—how dealers' shelves were loaded—how prices had gone to smash.

Being not only nurserymen, but extensive growers of fruit as well, and above all vitally interested in the prosperity of the industry, we applied ourselves to an intensive study of the situation.

The prospect was not assuring at that time. Conditions warranted the anticipation of a long cycle of depression in the fruit industry.

When the crop of 1921 had been harvested and growers had realized the proceeds from its sale at exceptionally good prices, one marveled at the rapid recovery to a status of prosperity on the part of California fruit growers; *whereas other producers, not alone in the East, but throughout the West, were still in the dumps.*

BUSINESS IN CALIFORNIA WAS GOOD BECAUSE THE FRUIT GROWER HAD MADE MONEY. Business elsewhere was poor!

While the spring of 1921 was one of gloom and depression, the spring of 1922 found every vestige of the 1921 crop gone into consumption and warehouses clean. The California fruit grower is harvesting his crop of 1922 with prosperity assured.

Why this marvelous recovery of the California fruit industry in advance of every other producing industry? There is a reason!

Figures Prove State's Advantage

I have many times reiterated, in statements concerning the California fruit industry, that California, by reason of her natural climatic advantage, fertility of soil and abundant water for irrigation, was by Nature favored for Fruit Growing, as against the enormous climatic handicap imposed upon the fruit grower of every other state—that eventually California will supply the fruit of America in ever-increasing quantities, and not alone of America, but to a large degree, of the world!

In studying this situation, and seeking to verify my conclusions, I obtained figures from Washington and made a comparison of the census of 1910, as compared to 1920, so far as they related to fruit growing.

THESE FIGURES CONFIRMED MY SURMISE! Of themselves they tell the story. They are of vital interest to every fruit grower. They prove that by reason of the natural climatic handicap placed upon the Eastern fruit grower, his business is decreasing; while, by reason of the natural advantages accruing to the California fruit grower, his business is increasing!

How Condition Affects Growers

It is not the intention to gloat over the misfortune of our brother producers in the East. Yet, by reason of the annually *decreasing acreage* devoted to fruit growing in nearly every state of the Union, there is being created a vacuum in the production of fruit throughout the United States. At the same time there is *an increase* in the consumption of fruit in the dietary of the American people. This condition will, in the years to come, *require every acre of land in California adapted to fruit growing, to supply the demand for this essential food!*

In view of these circumstances, California fruit growers should not go to sleep on the job. We should so organize our distribution and so exploit the potential consumption of our products to the American people, that California fruit products and their use will be as familiar to housewives and chefs as Cream of Wheat, Crisco or Ivory Soap.

Figures of Vital Interest

IN 1920 THERE WERE 44% LESS FRUIT TREES BEARING AND NON-BEARING IN THE ORCHARDS OF THE UNITED STATES, OUTSIDE OF CALIFORNIA, THAN THERE WERE IN 1910!

According to the census of 1910, there were in orchard in the United States outside of California, bearing and non-bearing, 510,154,042 trees. According to the census of 1920, there were in orchard in the United States, outside of California, bearing and non-bearing trees numbering 285,326,973—making a decrease in the number of trees in orchard of 224,828,069, or a decrease of 44.07%.

This decrease, tabulated in the four leading varieties of deciduous fruits, is as follows:

NON-BEARING AND BEARING IN ORCHARDS IN ALL OTHER STATES OF THE UNION, NOT INCLUDING CALIFORNIA:

	1910	1920	Percent Decrease
APPLES	213,576,136	147,229,603	31%
PEACHES	124,433,986	76,837,916	38%
PEARS	22,205,334	16,214,668	27%
PLUMS AND PRUNES	21,614,834	15,821,652	27%

THE DECREASE IN ALL VARIETIES OF FRUIT GROWN IN EACH STATE, TABULATED BY GROUPS IS AS FOLLOWS:

	Percent Decrease	Percent Increase
NORTH ATLANTIC		
Maine	.263	
Massachusetts		161
Connecticut	.115	
Rhode Island		.14
Vermont	.308	
New Hampshire	.313	
New York	.097	
Pennsylvania	.066	
New Jersey		.033
Delaware	.222	
Maryland	098	
Virginia	.052	
West Virginia	.043	
SOUTH ATLANTIC AND GULF GROUP		
North Carolina	.218	
South Carolina	264	
Georgia	.005	
*Florida		.574
Texas	.518	
Alabama	.317	
Louisiana	458	
Mississippi	.397	
MIDDLE EAST		
Wisconsin	.139	
Michigan	.295	
Illinois	.444	
Indiana	486	
Ohio	.297	
Kentucky	.312	
Tennessee	.351	
MIDDLE WEST		
Arkansas	.559	
Oklahoma	.524	
Missouri	.586	
Kansas	.712	
Iowa	.581	
Nebraska	.686	
Minnesota	.242	
South Dakota	.518	
North Dakota	.209	
INTERMOUNTAIN STATES		
Arizona		.132
New Mexico	.487	
Colorado	.482	
Utah	.444	
Wyoming	.148	
Nevada	.351	
Idaho		.019
Montana	.423	
PACIFIC COAST		
Washington		.019
Oregon		111
California		.296

*The above increase in Florida was mainly in Citrus trees, of which there were in orchard in 1910, 5,242,375, and in 1920, 8,923,911, or an increase in Citrus alone in Florida of 70.2%.

By this grouping of States, you can readily note the sections wherein the local production of fruit is most rapidly decreasing. Even in such states as Georgia, Texas, Alabama, New York, Missouri, Arkansas, Michigan, Tennessee, Oklahoma and Ohio, which comprise the principal competitive fruit growing states the number of trees in orchard is enormously decreasing, while no important fruit growing State shows any *increase* in trees in orchard excepting Florida (on Citrus) and Oregon and Washington.

THE AVERAGE ANNUAL PRODUCTION OF CALIFORNIA MEASURED IN DOLLARS AND COMPARED WITH THE ENTIRE UNITED STATES:

	Production of California	Production of all United States
1919	$267,000,000	$669,000,000
1920	333,000,000	744,000,000
1921	182,000,000	545,000,000

Measured in dollars, the production of California was 35% of that of the whole United States.

Production Per Tree

Figured on a basis of the number of trees, bearing and non-bearing, in orchard in the United States, per the census of 1920, and the production in dollars of orchard trees, aside from Grapes, for the year 1919, 285,326,973 trees bearing and non-bearing in orchard in all of the United States, excepting California, produced $371,486,807 of tree fruits, or an average production in dollars of $1.30 per tree

For the same year 64,387,338 trees, bearing and non-bearing, in orchard in California produced in tree fruits, not including Grapes, $202,037,218, or $3.13 per tree.

This comparison is significant of itself, showing that in 1919, for every $1.30 that the fruit grower in other States produced from trees in orchard, the California grower produced $3.13, or an income in California of two and one-half times per tree the production of the average in the other States!

This information is of vital importance to the fruit industry and, in order that it be given out verbatim, and that it be given the largest possible circulation by using all farm papers, I am spending our own funds in the purchase of this space, in order to disseminate these facts and figures.

There are three angles to the story that I want to tell. This is the first. Watch for the next.

J. E. Bergtholdt

Secretary and Manager, Silva-Bergtholdt Company, Nurserymen, New Castle, California.

S-02:8-1

ORCHARD and FARM

VOL. XXXIV , AUGUST, 1922 NO. 8

My Recent Visit With Luther Burbank

By the Editor of ORCHARD and FARM

THE world's greatest plant breeder has no sympathy for those who believe a man should retire at sixty, for many of his most wonderful accomplishments have taken place during the thirteen years since he passed the three score mark.

The writer recently visited Mr. Burbank at his Santa Rosa home and experiment gardens and found him still enthusiastic and energetic, despit his advancing years and comparatively frail constitution.

Luther Burbank arises each morning at 6:30, spends from 6 to 10 hours working among the plants and trees he loves, and concludes each busy day with from 2 to 5 hours' dictation.

Luther Burbank

During the four months just passed, more than 2000 letters a week were received in Mr. Burbank's office. Many of these required personal replies. Each afternoon during the busy spring season the Santa Rosa postoffice receives from the Burbank offices a truck-load of letters and packages addressed to all parts of the world, many of them carrying seeds, cuttings, roots and plants of the wonderful creations developed by this master artist.

SOME OF BURBANK'S NEW WONDER PLANTS

I saw white strawberries, fully ripe; giant poppies with flowers measuring 8 to 12 inches across; beautiful purple artichokes which Mr. Burbank has named "Everbearing," because they produce every month of the year.

One of the most remarkable of the new fruits is an "Alligator Pear," developed from seed brought from Chile, which has weathered all of the severest frosts and which now forms a most compact tree about 14 feet high. Mr. Burbank predicts a great future for this new avocado and believes it may form the basis for development of an entirely frost resistant variety to replace some of the less satisfactory types now produced in this country. This would greatly widen the scope of the avocado industry, which now is confined to practically frost-free areas.

Here and there throughout the Burbank gardens were plants tied about the stems with small white rags. These rags are Mr. Burbank's "markers" with which are designated the superior individuals selected for propagation.

Those who assert Mr. Burbank has passed his prime are mistaken. He is now doing some of the most wonderful work of his career. He is not content with having produced the world's earliest and best tomato, now grown in almost every civilized nation, or the wonderful potato that bears his name, or the tree known as the "Royal Walnut," a cross between the common black and the commercial varieties. These and his hundreds of previous creations are but milestones in an amazingly active career.

Among the most interesting of his more recent triumphs is a strange corn, known as "sorghum pop," which, it is said, will produce a full crop of corn on land so poor and sandy that no other variety can grow a single ear.

An interesting curiosity is the new "Prolific White" sunflower, which bears great single heads of purest white seeds and which has very short stalks with a great deal of foliage, an important factor in reducing the depredations of birds.

The Burbank "sun-berry" is described by Mr. Burbank as a new species of "solanum," the berries being almost exactly like the sweet huckleberries of the Eastern States.

GRAINS AND FORAGE PLANTS AMONG HIS CREATIONS

Mr. Burbank has worked with all species of plant life and among his most valuable products are improved varieties of grain, including rye, wheat, barley and oats.

A new forage grass is a cross between Sudan grass and sorghum, known as Sudan-sorghum. Last summer this amazing plant produced stalks on Mr. Burbank's farm averaging 14 feet in height.

So one might name scores of interesting species, many of which represent 20 or 30 years of patient work. Mr. Burbank receives annually thousands of samples of seeds and plants from foreign countries. He told me that he considers himself fortunate if he succeeds in producing one valuable plant from each thousand that he tests.

For years his collectors traveled abroad. One who visited Chile entered a section where white men never had explored and in the garden of a native Indian found some samples which later proved among the most valuable the famous experimenter had ever received.

Almost every foot of Mr. Burbank's home place is devoted to his work, even the shade trees, flower beds and porch vines including new and strange species for which he has combed the world.

The Shasta daisy, which Mr. Burbank produced, represents a combination of the English daisy, the Japanese, the La Custa from Germany, and the common American wild daisy.

THOUSANDS OF VISITORS BESIEGE HIS GATES

Probably no American is better known throughout the world than Luther Burbank. During the past year an average of more than 25 visitors sought his gates each day. This means that more than 8000 persons came to Santa Rosa especially to visit the Burbank gardens during the past 12 months. Many of them were captains of industry; many were foreigners of noble birth; many plant or nature lovers like himself. Needless to say, Mr. Burbank did not talk with all of them; in fact, so numerous are his callers that were he to receive every person who sought an audience, he would have very little time for his work.

Our readers may consider themselves very fortunate, therefore, in being able to receive through ORCHARD and FARM the few messages actually written by Mr. Burbank himself, documents which will become more precious as years pass, for many of his admirers believe there never will be another Burbank.—J. C. K.

No Marketing Mistakes on the Radio Farm —By Philippi

To Success by the Milk Lamb Route

By Albert J. Mason

"You Can't Pull the Wool Over His Eyes!"

Joe Miramon, Holding 16-pound Fleece From One of His Ewes

SEVENTEEN years ago, a sunny Frenchman came to sunny California. He had no assets but health, a happy heart and determination to make good in the land of his adoption.

Today his name is good for sums in four figures, and a $25,000 flock of sheep is adding rapidly to the already substantial assets he has acquired in Tulare and Kern Counties.

At 17, Joe Miramon arrived in San Francisco, unable to speak a word of English. At 23 he had become an American citizen and already was upon the road to independence.

In his native province of Basses Pyrenee, Joe had worked with sheep and it was as a helper and herder that he earned his first American money.

THRIFT AND INDUSTRY

Needless to say, he saved most of his wages. It was not long until he was able to buy a fourth interest in the flock he was tending. Soon he had one-third interest, and finally became half owner.

Then he sold out his share and started in business for himself. He made one or two "bad deals" and once had to make almost a new start. But nothing could hold him down.

Profiting by his failures, the young French-American became known as a successful sheep man. He accumulated land, stock and friends. His quick wit, ready repartee and reputation for business sagacity and square dealing made him a favorite in his community.

And now, Miramon is one of the most successful producers of "milk lambs" for early market.

BUSINESS PAID ITS WAY

He has not as many sheep perhaps, as others who engage in the same business, nor does he own as many acres of land as others who had greater opportunities. But he has combined keen observation with good judgment to the extent of developing, without capital, a highly profitable business. With a partner, J. P. Lassalle, he is now perfecting and enlarging his enterprise. Briefly, the Miramon-Lassalle system is this:

They maintain a flock of from 2000 to 3000 head of crossbred stuff, showing a preponderance of Merino blood. About 2000 breeding ewes, from 3 to 5 years old are kept on hand.

By selection and culling, this flock has been developed into one of the best of its kind in California. The ewes are uniform in type and size, and of the most profitable ages. The best ewe lambs of the desired type are retained to replace losses by sale and culling. Occasionally, new blood is added by purchase of young or aged ewes.

HOW EWES ARE HANDLED

These ewes are bred about June first to purebred Hampshire rams and the lambs are marketed from March 15 to April 15, weighing from 70 to 80 pounds. Most of the lambs are sold to Los Angeles packers.

This year the partners sold 1500 of their 2000 lambs at 12 1-4 cents a pound, making a net return of $9.18 a head. The culls were retained for sale during the summer after they have accumulated more weight upon stubble and alfalfa pasture.

Part of the Flock "Nooning" in a Shady Corner

SHEEP REMAIN IN VALLEY

The sheep are maintained entirely upon rented land and do not leave the floor of the Valley, summer or winter.

Although an owner of valuable farm land, Miramon does not find it profitable to use it in connection with his sheep enterprise. On the other hand, he has rented for several years, some 400 acres of good land about 12 miles northwest of Porterville, paying in cash rental from $12.50 to $20 an acre, a year. This means a cash outlay for the land of from $5000 to $8000 a year. Yet the partners believe their system more profitable and satisfactory than carrying the interest upon a heavy land investment. (Their rented acreage is valued at from $300 to $500 an acre.)

ALFALFA A VALUABLE ASSET

The tenants maintain a complete outfit of horses, machinery and equipment, and pay for the irrigating water. The ranch includes 300 acres of alfalfa, which is used in three ways, as pasture, for hay and for producing seed.

"We offset to some extent the hard times of last year by allowing 60 acres of our alfalfa to make seed," said Mr. Miramon. "From this acreage, after it had been pastured and cut for hay, we harvested 51 sacks of seed which brought a good price. We also raise seed for our own use, rotating our fields by planting them to barley, wheat or milo-maize for one year and then re-seeding to hay."

Barley yields 30 sacks per acre. Some grain is retained for emergency feed and at least two cuttings of alfalfa are stacked for use during the fall months before the rains commence.

The lambs arrive in November on alfalfa pasture. There is plenty of green feed until June, when stubble land is rented from neighboring farmers and the sheep herded on various fields until fall.

He Has Been Down, But Never Out

THE extent of a man's misfortune depends upon whether his spirits are low—or only his bank balance. Joe Miramon has had more downs than ups, but has never lost his smile. Now his friends say he is "up" to stay. Early lambs bring high prices—and Miramon's are always among the first on the market.

COST OF PASTURE AND WATER

From $3 to $6 per acre per day is paid for stubble pasture. In addition, the water consumed by the sheep is measured and paid for at the rate of 75 cents per 1000 gallons.

"This water item is no small one," asserts Miramon. Our summers are hot, and the sheep consume on an average of 1½ gallons per head per day.

Asked to name the principal factor in successful early breeding, the partners emphasized the necessity for keeping the ewes in the best possible condition.

"At breeding time, our ewes are fat. We have observed many failures in this business through allowing the breeding ewes to become run down. Give them the right start and they will bring 100 per cent of lambs for the earliest market."

The ewes, yearlings, and cull lambs are shorn in May. Shearing costs 22 cents this year the shearers furnishing everything, including sacks, and boarding themselves. When wool is high, the flock is shorn again in August.

OPTIMISTIC OUTLOOK

This year's first clip brought a good price. In fact, things are "looking up" in more ways than one for the firm of Miramon and Lassalle, who in common with other stockmen have all but faced ruin during the past two years.

"But we are coming out all right," asserts the energetic young sheep raiser, who despite the "hard pull" has never lost his smile. "While sheep men in other parts of the country are looking forward to their 1922 lamb money, we who take advantage of California's wonderful climate have sold our lamb crop, and are well on the way towards another season.

"We have heavy expenses in this business, especially in connection with the irrigation of our fields, but we are looking forward with confidence to a period of prosperity in which our 'hot-house' lambs will play a prominent part."

Above—Ewes at Watering Trough, Showing in Foreground, Toggenburg Doe, Used for Leader and "Traveling Dairy." Right—The Partners, Holding Ewe and Ram of Types Maintained for Production of Early Lambs.

PRACTICAL POINTERS IN FEW WORDS for Busy Farmers

Cost of Stacking Hay—Interesting figures on the cost of harvesting alfalfa have been compiled by the State College of Washington. The regular method used by most Washington farmers includes mowing, raking with dump rake, cocking by hand, hauling to the stack with sleds and slings and stacking with a common derrick. This method, it was determined, costs about $1.95 per ton. Comparative figures were based upon the use of side delivery rakes instead of dump rakes, bunching rakes to replace hand cocking, "Bull" rakes for hauling to the stack, and an overshot stacker instead of the derrick. This process cost 67 cents per ton, representing a saving of $1.29. It was estimated that were all the farmers of the Yakima Valley to adopt improved methods, there would result a saving of $400,000 a year.

Grasshopper Invasion at Hand—Cultivated crops and orchards are likely to be attacked during the current season by grasshoppers, and in districts where ntive grasses are drying very rapidly, the damage is likely to be most acute, because the insects will be driven into the cultivated areas for green food. Early preparation may prevent hundreds of dollars' worth of damage and even avert the destruction of young trees. A prepared grasshopper poison is available. This may be mixed with water and bran at any time it is to be used. A good formula for home mixing includes 1 pound paris green, ½ dozen green lemons, 2 quarts cheap blackstrap molasses, 3½ gallons of water, 25 pounds wheat bran. Liberal applications of the poison mixture at the first signs of an invasion usually will work havoc with the attacking army.

Marketing of Primary Importance—Recognizing the need for specialized courses in agricultural marketing, George Livingston, for some time chief of the United States Bureau of Markets, has brought together a faculty, comprising of more than fifty prominent marketing specialists, and has compiled intensive mail order courses. The new school is sponsored by J. R. Howard, president of the American Farm Federation. Headquarters have been established at Chicago. As Arthur Brisbane said in a recent editorial: "Our greatest problem is distribution. It is comparatively easy to manufacture goods or grow crops, but how to get water from lakes on to dry land, knowledge from books into men's minds, goods from factories into men's hands, food from farms into men's stomachs—these are the great considerations." There can be no over-production under an efficient system of marketing. The new institution which plans to co-operate with educational bureaus, farm organizations and agricultural colleges undoubtedly will fill a long-felt want.

Control of the Argentine Ant—In orchards the Argentine ant protects the mealy bug and other pests. The ants, therefore, indirectly, are the cause of serious damage. The U. S. Department of Agriculture has worked out a formula on the theory that if food, in the form of a dilute poison syrup, is furnished the worker and ants, they will carry it back to the nest, feed the queen and young and thus [illegible]y all. Here is the Government formula and directions for mixing and applying the poison:

Granulated sugar 12 pounds; water (distilled) 10 pints; tartaric acid (crystallized) ¼ ounce. Boil thirty [illegible], cool Add distilled water to [illegible] for evaporation. Dissolve [illegible] [illegible]nite (C. P. only) ¾ ounce in [illegible] water (distilled), 1 pint. Cool. [illegible] to syrup and [illegible]. Add to the poison syrup, [illegible] p[illegible]. Mix [illegible].

[illegible] [illegible]pends [illegible] ingredients used, [illegible] measure-ment, and their combination. Do not accept a single substitute for any article included. Sodium arsenite, chemically pure only, should be used. The so-called "technical" grade, handled by druggists, is unsuitable for ant poison. We prefer cane sugar to beet sugar. Glucose should not be substituted for the granulated sugar. The strained honey should be entirely free from crystallization. Use distilled water; very hard water contains material that affects the solubility of the arsenic. Boil in a clean vessel. Keep in a tightly-closed, clean receptacle while temporarily stored.

This syrup should be placed on the trunks of trees in cans, or in ant runways. The best containers for this purpose are two-ounce spice cans. They should first be dipped in hot paraffin to prevent rusting. A nail hole should be made near the top of the can, through which the ants may enter. Place a small amount of clean excelsior in the cans and then add about one inch of poison syrup. These cans may be hooked onto the trunk of a tree by driving a small finishing nail into the latter. They should be inspected frequently and the syrup replenished when necessary. They should also be labeled "Poison."

Pointers for the Fly Season—Although the house fly is bad enough, the stable or horsefly is even more dangerous and annoying. In the control of this disgusting pest, an ounce of prevention is worth a pound of cure. Cleanliness about the stables, poultry houses and other places where animals are kept, is the best preventative. The provision of screens for stable doors and windows, especially in the case of dairies, is an investment likely to be repaid many times over in comfort and increased production on the part of the animals. Where a spray is indicated, the following, applied to the animals lightly each morning, will be found effective: 5 gallons of kerosene mixed with one pint of either oil of mirbane, oil of tar or cresylic acid.

New Avocado Lore—The disastrous frost of the past winter emphasized the importance of developing cold-resistant varieties of the avocado. It was found that the Fuerte, one of the types recommended by the Avocado Association, was one of the most resistant varieties now being grown in California. Analyses recently made under the direction of Prof. N. E. Jaffa, Professor of Nutrition, University of California, showed that the Fuerte when fully matured, contains 20 to 24 per cent fat. Other varieties run as high as 31.5 per cent. Probably no food product excels the avocado in nutritive value and high oil content. Recognizing the growing importance of this industry, the Division of Agricultural Education, University of California, is giving a free correspondence course in avocado growing. Circular No. 113, obtainable free on request, describes this and other courses.

How to Care for Firewood—Many eucalyptus and other trees are being cut down in Central and Southern California to open up fields and roads or to do away with objectionable features resulting from too large growth of windbreaks and ornamentals. Much of the wood from these trees is damaged through improper handling. A good method is to cut the trees in the spring and let the logs (preferably sawed into short length) season on the ground during the dry summer months. In the fall the logs may be sawed into stove length and the sections split readily into firewood. Careful stacking is necessary if the wood is to be kept out of doors during the rainy season. A good method is to pile in a round or conical shape, making a cone 6 to 10 feet across the base, laying the sticks with butts out and tapering in towards the top, keeping the center always filled with loose sticks, and covering with a protector of old boards, overlapping to shed moisture. Wood piled in this manner on high ground, where drainage is good, will keep indefinitely, only the outer layer becoming damp when it rains.

Breaking Up Hard Pan—That California is not the only State troubled with hard pan areas is indicated by recent dispatches from the University of Missouri at Columbia. It is stated that Richard Bradfield, soil chemist, is devoting his entire time at the Missouri Experiment Station in pioneer work in the breaking up of hard pan. Dr. Bradfield's project, however, differs from methods in use in California. He is working along the line of chemical treatment. Scientists are confident they will be able to solve this problem by the use of certain chemicals. Dr. Bradfield's work will be followed with interest.

The Dog Flea; How to Destroy—There are various methods of ridding a dog of fleas, but it is impossible to keep the animal free of the infestation unless the adult fleas and larvae are destroyed. Therefore, in order to eradicate dog fleas, it is necessary to destroy the adults found on the animal, thus preventing a further production of flea eggs, and also to destroy the larvae which may develop in the kennel bedding, under matting, carpets, etc. The California Department of Agriculture advises that fleas on the host may be killed by washing the animal with kerosene emulsion or by a thorough dusting with derris powder. The immature fleas may be destroyed by sprinkling flake naphthalene over their breeding places and permitting it to remain there twenty-four to forty-eight hours. If the rooms in a dwelling become infested, the floors should be washed with lye water. Then, if large rugs or carpets are to be laid, place strips of tarred paper under the edges. Tarred paper is regarded as a flea repellant.

Farm Cement Mixers—With the increasing use of cement on farms for all kinds of construction, hundreds of ranchers are installing portable cement mixers either for their own use or for contract work. Manufacturers, recognizing this special need, have developed efficient, low-priced power mixers which may be purchased with or without engine. One type of mixer has a large capacity and may be operated with the tractor. Another style has a capacity of only one wheelbarrow load and is operated with a small gas engine. For the farmer who is doing considerable construction work, laying foundations and cement floors, or constructing water troughs, fence posts and similar equipment, a mixer is a profitable investment. Not only does it save labor but it also insures a more uniform grade of concrete.

Destroying Poultry Lice—The generally accepted idea that poultry cannot be entirely freed from lice and mites is scouted by modern poultrymen. Although more than 40 kinds of parasites and lice infest farm poultry, all may be killed by inexpensive treatment.

Common *sodium fluoride*, a white powder which can be purchased at most drug stores, is considered very effective, and at the same time is one of the cheapest remedies for all kinds of poultry lice. One pound of this chemical is sufficient to treat 100 fowls. A small quantity of the powder held between the thumb and fore finger is dusted among the feathers next to the skin on head, neck, back and breast, and at the base of the tail. Lice remain on poultry constantly; therefore, the only effective treatment is that which is applied directly to the birds. Mites, however, hide during the day in crevices about the roosts and nests, attacking the poultry only at night. Mites are best controlled by keeping the poultry houses and roosts clean, and by spraying the premises thoroughly with crude oil, kerosene or heavy coal tar preparations.

Draining Through Wells—Occasionally wells may be used advantageously to dispose of surplus water. Vertical drainage is valuable where outlets into natural or artificial water course are not accessible, or where accumulated water is held in depressions by a layer of tight soil or rock which does not permit passage through it. The well should terminate in an extensive layer of course sand or gravel. Many features should be considerd before undertaking drainage on this basis, but when it is practicable, land may be drained at low cost. A story is told, however of one farmer who in drilling a drainage well, struck a flow of arteslan water. In any event, this method is considered rather a gambling chance and is not advised without a careful survey of the situation.

Watch for the Loafing Hens—During the summer the low producing fowl, having small demand for the yellow coloring matter manufactured by her body, puts it into legs and beak, making them a rich yellow. The busy hen, on the other hand, has pale legs and beak, the color being used in the yolks of the eggs. The hen that is most beautiful in summer and fall should be always under suspicion.

Ben Gonnadooit Says

In this farmin' business, no matter how hard a feller works, they's allus somethin' more t' do. Fer that reason I never could see enny sense in breakin' my neck t' catch up. Why, it's jest like runnin' fer a train that's already doin' forty mile an hour!

So I believes in takin' consid'ble time off fer rest an' recreation. I learned my lesson f'm Jud Jones. He worked like a hoss fer 40 year, an' never made much more'n a livin'. Then one day, oil was discovered on th' adjoinin' farm. But Jud was so far gone f'm overwork, th' shock killed him.

Now his wuthless sons is a-spendin' th' money he might have had. An' you kin bet yer last suspender-nail, I ain't gonna git caught that-away!

Nowadays, with so many chances fer sudden wealth by a lucky strike, it pay's t' go along sorta easy-like. When a feller's ship comes in, what good is it gonna do him ef he's too weak in th' knees t' walk th' gangplank? I ask ya!—BEN GONNADOOIT.

He Hid His Light Under a Bushel

But Albert Etter of Ettersburg Has Achieved Fame by His Works

TO USE Albert F. Etter's own words: "I started in as a fool kid to develop new varieties of plants, and didn't have the heart to make a failure."

This remarkable Humboldt County experimenter has created some of the finest varieties of strawberries and apples ever developed. Always he has avoided publicity, but in recognition of his achievements, the 54th Convention of Fruit Growers and Farmers appointed a committee, headed by George P. Weldon, to visit Mr. Etter's farm and make an official report to the State Department of Agriculture concerning his accomplishments.

Incidentally, Mr. Weldon has prepared exclusively for ORCHARD and FARM this brief but absorbing biography of the "strawberry King."—The Editor

By George P. Weldon

CONTRIBUTING HORTICULTURAL EDITOR OF ORCHARD AND FARM

POMOLOGIST, CHAFFEY JUNIOR COLLEGE OF AGRICULTURE

GENIUS is something that manifests itself in many different ways and in all kinds of places. It is found in the great city where the light of day scarcely has a chance to creep in; it is found in the open country where nature inspires and where man is free to unravel her secrets; in either environment it is not afraid of hard work.

The man who inspired this little article is an interesting character of Humboldt County, California, Albert F. Etter, who in recent years has become famous through his work of originating new varieties of the strawberry, some of which are fast assuming a place of great commercial importance in different parts of the United States and abroad.

George P. Weldon

There is no such word as failure in Etter's vocabulary, and we find in him a man who patiently labors year after year until finally his dreams come true.

Not that this man is a dreamer in the sense of some who never get further than the dream stage. Albert Etter acts upon the impulse of his dream until something tangible finally results from it.

A NATIVE SON

Mr. Etter was born nine miles from Placerville in El Dorado County a half century ago. Thus the light of day first shone upon him when mining was the chief industry of that section. But the love of gold was never great enough to attract him toward the mining industry, and as a mere lad he became fascinated with horticulture and his mind was fully made up to engage in horticultural work as a life calling.

In 1895 two of the Etter brothers migrated north into Humboldt County and homesteaded land 60 miles from the nearest railroad at Ferndale. At the present time the nearest railroad point is South Ford, 50 miles away. Why should any one who had made up his mind to follow plant-breeding work locate so great a distance from a railroad point? Again Mr. Etter's explanation will give us further insight into the character of the man:

"Ettersburg, in a business sense, suffers from a splendid isolation. The soil is of a nature that produces a perfect plant. The climate of Ettersburg is just like heaven."

HE LIKES MOISTURE

Incidentally, in talking with the subject of this sketch, the fact was gleaned that the annual rainfall at Ettersburg is about 120 inches, with as much as 150 inches during some seasons. Imagine, if you please, a place where the rainfall can be computed in yards instead of inches and you will get some idea of the precipitation at Ettersburg.

Thus we find in this location little that would detract from a close application to the exacting details of plant breeding and plant propagation work; a soil that will grow the kind of plants the fruit grower wishes to secure; a climate that is so fine that one is reminded of the hereafter—that place which we are told has been prepared for the faithful; and a rainfall that soaks the ground until it can hold no more moisture.

When the Etter brothers settled in Humboldt County the location of their choosing was such as to discourage men without foresight and thrift. The land was hilly and heavily timbered; the roads were mere trails, and the necessities of life were not easily brought in by means of pack animals.

Nature, however, bad made provision and fish and game supplied the table with meat, while a little effort soon resulted in the production of berries and garden truck "a'plenty."

The problem of getting rid of the timber so the land might be farmed immediately presented itself. Timber was valuable near the railroad, but of little value 60 miles away with no means of transporting it. This problem was solved in a logical and common-sense way. Buildings were needed on the ranch; therefore a saw-mill was purchased and erected.

Today the mill occupies an important position on the place, and numerous houses, barns, bridges and fences may be seen in which every stick is a product of the saw-mill. Not only was the lumber valuable in the development of the property, but wood sufficient to last for years was also secured in the clearing of the land.

CLEARED LAND PRESENTS PROBLEMS

After the timber had all been removed it was soon discovered that the soil would produce little in the way of crops in its raw state, and at once the problem of making it productive was presented. This leads up to a point in my story where the goat should be introduced. The character of this country is idcal for the best development of this animal. Goats were pastured and fed on the land and it was found that a rapid improvement of the soil resulted.

Then Mr. Etter made the discovery some 16 years ago that a variety of lentils known as Monantha Vetch was admirably suited to his condition. This plant is now grown in many places on the ranch for hay and pasture. Goats are very fond of it and the food value is high. The growing of this crop has added nitrogen and bacterial life to the soil until today there is little trouble about growing anything that is planted. Mr. Etter states, in fact, that Monantha proved to be the key to the situation, for without it such soil building would not have been possible.

A VALUABLE PLANT

Right here it seems wise to interject into this story the thought that Monantha Vetch is a plant worthy of trial in places where conditions of drought will not permit the growing of other legumes. It should make a good cover crop for orchards under such conditions. Mr. Etter states that in all his experience he has never found anything so resistant to drought. It was seen upon the occasion of the writer's recent visit to his place growing on top of a hill where nothing but manzanita had grown previously, and where the moisture from the rain, no matter what the precipitation, could not remain in the soil for any length of time.

At Ettersburg the vetch is allowed to grow wild on hard, dry soil; it seeds itself year after year, and in every sense has proved an admirable crop for the conditions of that section. It is worthy of trial under dry, desert conditions of Southern California, and as a cover crop in deciduous orchards, and might also prove valuable in citrus groves. Mr. Etter warns against expecting too much of it the first year, or until the ground has become thoroughly inoculated with the bacteria of its roots. His experience was that the first year it was sown the growth was rather meager, but the second year, and after, it came out luxuriantly. Any one wishing to experiment with this plant probably could secure seed in limited quantity at least from Mr. Etter, who allows some of his planting to make seed each year.

GOATS PROFITABLE

Going back to the goats at Ettersburg, it is interesting to note that a cheese factory has been erected with a present capacity of 100 pounds of cheese per day. About 400 goats in the community furnish milk for this factory, which is run on a strictly cooperative basis. The first season's crop of cheese will soon be ready to place on the market and every one in the vicinity is expecting a great success for a product which is pronounced first class.

Not only are the goats fed upon Monantha Vetch at Ettersburg, but the leaves of the Black Locust tree also find a place in the ration. After the season's growth of the trees has been made it is pruned away almost entirely, and a grade of fodder produced that is unexcelled. Mr. Etter stated the trees bear much more luxuriant foliage where heavy trimming is practiced. He showed some trees from which no feed had been taken in proof of this statement, which had made very little growth for the season, and other trees which had been trimmed where the growth was luxuriant and from which much feed will be gathered soon.

SUCCESSFUL PIONEERING

The writer has attempted to weave into this article a few of the practical points which have made possible success in developing a prosperous community far from the railroad in a region that is not easily accessible. He has tried also to reveal the personality of a man who has been throughout his life a close student of nature, the great teacher whose secrets are gradually demonstrated to those who come in closest contact with her.

Above is shown the investigating committee examining plants in the Etter gardens. At right and below are views of the man whose work has earned for him the title of "Strawberry King."

Last November when the State Fruit Growers' Convention met in Los Angeles, Director of Agriculture G. H. Hecke asked the writer to serve on a committee to investigate the plant breeding work that Mr. Etter is doing in Humboldt County. Other members of the committee were O. E. Bremer, county horticultural commissioner, Santa Rosa, and J. F. Benton, county horticultural commissioner, Eureka. The committee's report will be presented to the Director of Agriculture before this article goes to press.

In this way the fruit growers of the State and the State Department of Agriculture are giving recognition to a work that it is believed is of inestimable value to California horticulture. It is hoped that the good work of Mr. Etter may continue and that among the vast number of his plant creations many may prove worthy of a permanent place among our choicest varieties.

EDITORIAL DEPARTMENT

Timely Topics among Farm Folk

James C. Knollin, Managing Editor

The Farmer and the "Radio Wave"

NO CRAZE ever swept America as the radio wave. It is a wave of intense interest, of constant surprises, of undreamed possibilities.

It is a craze in that everybody is "crazy about it," but there is nothing crazy about its future. Wireless telephony has become established as a definite, potent force affecting every phase of modern life.

But its greatest practical application is yet to come. Thomas A. Edison, in a recent statement, hit the nail on the head!

"Radio will be a fad in the cities," said the great inventor, "and will soon die out, but in the country it will last. People in the cities get tired of everything in a little while. But in the country it is different. Life in the country is likely to be more or less dull, especially on winter evenings. The radio phone therefore will be welcomed on farms and villages, and will do much to brighten rural life."

But even Mr. Edison failed to mention the most valuable application of wireless telephony, the broadcasting of market and weather reports. Mr. Phillipi's cartoon, on page 5 of this number, suggests, perhaps, the most interesting phase of radio development. No longer need the isolated rancher sell his produce by guesswork or upon information furnished by profit-seeking dealers.

With the installation by farmers of efficient receiving sets, not only entertainment from distant stations, but also the daily official government reports, are at his command. Here lies the greatest value of this wonderful discovery. Are you a "radio fan"?

Do Farmers Believe in Advertising?

THE farmer, individually and through his marketing organizations, is becoming one of the greatest and most consistent advertisers. The latest example of agricultural leadership in advertising is the new schedule of the Sun Maid Raisin Growers, which calls for an expenditure of $2,520,000 for the crop season of 1922-23. In addition to being the largest amount ever expended by the Raisin Company, this new appropriation is also the largest sum ever expended in any food products campaign in the world.

Starting with an appropriation of only $120,000 in 1914, the California Raisin Association has increased its annual appropriation with almost unbelievable rapidity. And in planning this great expenditure, the Raisin Company is merely enlarging upon the method which has proved successful in the past. With a greatly increased tonnage of grapes to market, the raisin growers are meeting the situation by spending more money to tell the public why and how to use raisins.

Not only will all of America be covered by means of magazines, newspapers, posters, window displays and motion pictures, but also foreign countries will be told of the food value and delicious flavor of the Sun Maid product. The advertising will appear in China, Latin America, England, Scandinavia, Canada and Continental Europe.

What a contrast to the old hit and miss methods of marketing grapes! Who says the world has not progressed?

To Increase Consumption of Meat

ON JULY 1 the National Livestock and Meat Board created by producers, commission men, packers and retailers of meats, started its collection of 10 cents per [illegible] on all livestock received at the various markets. The money so obtained will be used as a co-operative fund for publicity and advertising to increase meat consumption. This fund will be expended under the direction of the board, the majority of the members of which were [illegible]ted by producers' organizations.

The Livestock industry has suffered more than the average farmer realizes through "anti-meat" propaganda, first during the war and later as carried on by food fadists and patent medicine vendors.

If we may judge by successful advertising campaigns [illegible] of producers, the Livestock and Meat Board [illegible] a short time change the entire aspect of the [illegible]. Probably no event in recent years is [illegible] from the producers' viewpoint. If the [illegible] to be maintained upon a profitable [illegible] to eat more meat.

Why Race With a Train?

A FAST train can cover the one-quarter mile from whistling post to crossing in 15 seconds!

Do you know just exactly how far you can drive your car in one quarter of a minute? It is almost a hopeless game, and yet hundreds play it every year with consequent appalling loss of life.

Why do motorists race for crossings? Unquestionably it is because they obey a reckless whim without waiting for sober second thought. Most of us have experienced the exhilarating mental suggestion, "I can beat it across." But fortunately only a few obey this impulse.

How simple a precaution to pause at each crossing and size up the situation by both sight and hearing! No man can make a better investment of a little time. When our end comes, we are a long time dead!

California Needs More Fences

THE old "law of the range"—which in California is also the State law—provides that the land-owner must "fence out," or in other words, fence his property against roving stock.

Many farmers and stockmen believe, however, that this old law must be reversed to meet changing conditions, and that livestock owners will be required to "fence in" their animals in order to avoid damage suits.

Be that as it may, we must face the present fact that California has greater need of good fences than possibly any other Western State. This need will become more acute as the process of cutting up large land holdings continues. And the necessity for fences will increase, also, as fruit and specialty growers learn the value of mixed farming, and are forced to depend upon livestock for the maintenance of fertility.

Many progressive range stockmen, far from attempting to adhere to the old practices, are themselves advocating fenced ranges, and are "close-herding" as the most efficient and profitable method of handling their animals. Literally hundreds of miles of fence have been constructed upon California's vast estates during recent years.

And these men, as well as the farmers and fruitgrowers, are building better fences. They know the initial cost of a fence is less important than the cost of maintenance. Investigation of the fencing situation throughout the State has revealed interesting facts. More heavy woven wire and less barbed wire is being sold. Cement is entering more generally into fence construction. Carloads of steel posts are being distributed. And when wood posts are used they are selected more carefully, treated more scientifically and "planted" more permanently.

This is as it should be. Bankers are encouraging good fencing, for they realize that nothing increases the value of a farm more than a neat, strong, permanent fence.

Eventually the sagging "two-barb" line will be as obsolete as the enclosure of split hickory rails used by the middle western pioneers of Lincoln's time. And the era of the "open range" already is passing into history.

ORCHARD and FARM

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LOS ANGELES

Grow What the Market Demands

This Is the Advice of the Largest and Most Successful Early Vegetable Producer Between San Francisco and Seattle

PRODUCE the crops that are in demand, regardless of what you like to raise or what the neighbors are growing, is the suggestion of F. B. Chase, one of the most successful vegetable growers on the Pacific Coast.

"The shoemaker may stick to his last, but the farmer must jump from saddle to sickle, from hayfork to potato hook, sheep shears to pruning shears —whichever pays best," declares Mr. Chase. "I don't mean that he must change crops every year, but that he should learn to grow those which experience proves most profitable." Inspiration, as well as information, are afforded by this interesting account of Mr. Chase's career.—The Editor.

By O. H. Barnhill

LEAVING the dry, windy plains of Kansas thirty-three years ago, F. B. Chase, attracted by salubrious climate and cheap land, came to Oregon to engage in the livestock industry. He found both, but not in the same place.

Eastern Oregon is a fine stock country, with plenty of cheap pasture, but it is two-thirds of a mile up in the air—cold, dry and windy. The newcomer decided he would locate west of the Cascades, even if he did have to pay a stiff price for land. His cherished dream of sleek Shorthorns and prize Herefords was regretfully abandoned, for cheap feed was lacking in the region selected for his future home.

Taking the advice of neighbors, Chase planted a good share of his sixty acres of Willamette valley land, three miles from Eugene, to apple, pear, prune and cherry trees, then raised wheat on rented land to make a living while the orchard came into bearing. The price of this popular cereal dropped to 45 cents a bushel and Chase found that the more grain he raised the less money he had at the end of the year.

ONE PAYING CROP

There was one small crop, however, that always paid a profit—the vegetables grown between the rows of fruit trees. A sufficient quantity was at first produced to supply the family larder and to trade for a few groceries. The amount was increased until most of the store bills were paid in this manner. The remaining surplus was sold to city people, produce being peddled from house to house. It was hard, hot work; laboring until sundown to get a load ready for morning and then starting at daybreak to begin the weary rounds over the endless city streets. But the expense was small and the returns per acre large.

The orchard did not pay the profits predicted by fruit enthusiasts. The trees were unbelievably slow about coming into full bearing and were the victims of all sorts of Hunnish and Bolshevistic foes—frost, drouth, insect pests and fungus diseases—while prices were often disappointingly low, leaving little on the credit side of the ledger after paying the heavy expense of production and marketing.

FRUIT TREES SACRIFICED

It takes a lot of nerve to chop down a fine fruit tree which has cost years of toil and expense to produce, but Chase gritted his teeth and laid the axe at the foot of all unprofitable trees, gradually changing his place from a fruit to a vegetable farm.

A small greenhouse was erected for the purpose of growing tomato and other plants needed to set the increasing vegetable acreage. From the large plant trade which soon resulted, the next natural step was to grow early vegetables under glass. Other greenhouses were added, until now nine spacious sun parlors shelter a million tender citizens of the plant world, covering one and one-third acres, the largest institution of its kind in the State.

In addition to the 65,000 square feet of hothouse crops, 100 acres of outside vegetables are grown, half on the home place, 20 acres on an adjoining tract and 30 acres on another place two miles distant, both of which were purchased to keep pace with the constantly increasing demand for Chase vegetables.

Having finally settled on vegetables as the most profitable crop, Mr. Chase found important problems to solve. There are many varieties of vegetables, some of which pay better than others. There is also the question of how many kinds it is most profitable to produce. Chase believes it poor policy to put all one's eggs in a single basket, but sees no reason why the basket should contain hen, duck, goose, turkey and forty other kinds of eggs. Variety is the spice of a vegetable grower's life, but there is such a thing as too much spice.

NUMBER OF VARIETIES REDUCED

By an intelligent system of selection, guided by the hand of experience, the number of kinds of vegetables was gradually reduced from 30 to 12. Furthermore, it is not expected that the same crops will be grown five years from now as are produced at present. As conditions change, crops are changed. What pays best this year may be superseded by a more profitable crop next year.

Potatoes, cabbage, cauliflower, broccoli, strawberries, tomatoes, cucumbers, lettuce, radishes, rhubarb, celery and spinach are the vegetables now raised. Head lettuce and celery are regarded as the most promising crops.

The general plan of production is to secure maximum yields by planting the best seeds on ground made fertile as possible, thoroughly cultivated and irrigated whenever needed.

Peddling became unnecessary years ago, dealers taking the entire output of the Chase gardens. Large shipments were made to other Willamette Valley towns and to the coast country.

Beginning this year, all "export" stuff will be handled by a wholesale grocer, who, it is believed, has better facilities for supplying retailers than has the grower. Chase keeps close tab on the market, however, setting the price on everything sold, allowing the wholesaler a certain percentage for handling.

BIG INCOME DURING BAD YEARS

In 1920, the year of peak prices, the total sales were $24,000. The following year, 1921, when farmers all over the country were complaining of low prices and no market for their crops, Chase increased his gross income 25 per cent, the total sales being $30,000. Vegetable prices had declined a little, but this was more than offset by increased production of more profitable varieties.

While other farmers were complaining that wheat, corn, hides and wool were a drug on the market at ruinous prices, Chase was selling tons upon tons of tomatoes at $10 a bushel, the retail price being 30 cents a pound, packed in five-pound boxes. Yes, these were grown under glass, but thousands of dollars' worth of head lettuce, produced in the open, sold for a nickel a head. Since the plants were set a foot apart, there were 40,000 to the acre, worth $1500 to $2000.

The point may be raised that the market for such high-priced produce is limited, but Chase finds ready sale for immense quantities. His rule is to grow the vegetables people want and for which they are willing to pay high prices. That is the secret of his success.

The labor problem was partly solved by growing a fine crop of boys, all of whom are following their father's footsteps down the rows of growing vegetables. One of them, Harold, has a home of his own on a forty-acre garden. Clarence, who looks after the sales and keeps the accounts, spent one year at the State Agricultural College, majoring in vegetable gardening. Elmo superintends the greenhouses, while Merle oversees the outside gardens. Two teen-age daughters are attending high school, where they are studying housekeeping and other useful subjects.

HELP PROBLEM SOLVED

It is comparatively easy to hire a man who can plow, harrow or pitch hay in a satisfactory manner, but very difficult to find men who are sufficiently intelligent, careful and painstaking to do garden and greenhouse work as it should be executed. Chase therefore holds on to a good man when he finds one, even if he has to keep help at a loss during the slack season.

GLASS HOUSES BUT NO STONES

THE subject of this article has glass houses, but has been to busy producing food to throw any stones. Last year, when most farmers were discouraged by low prices and lack of demand, he increased his sales 25 per cent—from $24,000 to $30,000

Maximum production of the highest-priced products is Chase's motto. Nothing but the very best in quantity and quality will satisfy the proprietor, who is constantly striving for better stock and bigger yields. Five dollars an ounce is paid for some seeds, in order to get the best strain available, while the naturally fertile soil is further enriched with both stable manure and commercial fertilizers.

OLD-TIMERS MIRTHFUL

Such methods seem criminally wasteful to old-fashioned Willamette Valley farmers, who still make wheat their leading crop, although the yield is only half what it was when the land was new. When Chase proposed irrigation in a region where it is popularly supposed to rain all the time, the neighbors said, "That newcomer is shore crazy."

Chase didn't stop at cheap ditch irrigation, but proceeded to put in pipes to furnish artificial rain for two acres of lettuce and radishes, which are wet in much the same way that a lawn is sprinkled. The rows are too close together to permit of ditch irrigation; therefore, the Skinner system of overhead watering is used. This is much more satisfactory for small plants than the furrow or flooding system.

An electrically-operated centrifugal pump draws water from a 20-foot well and forces it into a large pressure tank, which supplies the sprinkling system and the two acres of [illegible] stuff mentioned. Water for the latter is forced

F. B. Chase and Some of His Products

The noted vegetable grower is shown holding one of his prize cucumbers, and the first basket of 1922 tomatoes. The arrow indicates a bunch of celery from the Chase farm, awarded a prize at the recent "Celery King" contest.

Scenes on the Chase Produce Farm

At the left Mr. Chase is seen operating the overhead irrigation system used for producing lettuce. Right—Fancy cucumbers, in which Mr. Chase's little grandson seems to take great interest.

out of three-fourths inch pipes through one-sixteenth inch holes four feet apart. Larger holes are bored into the pipes and brass plugs with openings of the desired size screwed into the holes, making miniature nozzles.

The water pipes are supported by pieces of boards at a height of two feet and are turned to throw the water at various angles on either side, making it possible to wet a strip 40 feet wide with a single line of pipe. When the season is over, ten men carry a 200-foot pipe over to one side of the field, out of the way of the plow.

Water for 20 acres of ditch irrigation is furnished by another similar pump having a capacity of 300 gallons per minute and is emptied into a tank of sufficient height so that the water will flow through eight-inch underground concrete pipes to the high-line canal.

PLANT REQUIREMENTS STUDIED

Celery and lettuce have been found to require an immense amount of moisture and a great deal of plant food of just the right kind. Both are supplied without stint in the Chase gardens, the result being head lettuce which equals the California product and celery which took the second prize at a national celery show at Albany, N. Y., last autumn. Golden self-blanching is the variety grown. Repeated applications of nitrate of soda have been found necessary to produce best results.

New York head lettuce plants are set 12x12 inches, 40,000 to the acre. This crop sells for 60 cents a dozen and from two acres $3000 to $4000 worth is sold each year. On account of leaf burn, head lettuce cannot be grown successfully in greenhouses anywhere except in New England. The Oregon market is supplied by California growers until June 1, when the outdoor Oregon crop is ready for the table. The amount of head lettuce consumed here has increased enormously in the past few years and the growing of this crop is a new and promising industry.

Cincinnati Market, a long, red radish, has been found the most profitable variety of this succulent vegetable, of which two or three acres are grown. The Scarlet Globe and White Icicle are also grown to some extent. Grubs are a great pest, but many plantings are made and some crops are practically free from infestation.

Two acres of Riverside Giant rhubarb is proving a moneymaker. The price ranges from two to ten cents a pound, averaging four or five cents. Yields of several tons per acre are secured. A good strain has been selected, one which has thick, red stalks.

WINTER RHUBARB PRODUCED

A rhubarb plantation becomes unprofitable after seven to ten years, when the plants are dug up about January 1 and placed in a shed 24 by 60 feet, leaving plenty of dirt around the roots. Two ordinary stoves furnish sufficient heat to force the plants into growth, producing in February and March a crop which brings 15 to 20 cents a pound.

There is a five-acre patch of asparagus and ten acres of young plants. Palmetto, a new rust-resistant variety recommended by the Department of Agriculture, is being tested.

Fifteen to 20 acres of strawberries formerly were grown, but prices became so low that this crop was reduced to five acres. The Gold Dollar, a large, early variety, is considered best for table use and Ettersburg No. 121 for canning.

A small group of greenhouses are heated by hot water, but steam is used in the larger group, as it "carries" better than water. It is not considered profitable to use steam for less than [illegible] acre of buildings, however, as the fires must be tended every hour, and a smaller plant would not justify the large labor expense. One hundred cords of slab wood, which costs $3 a cord at a sawmill three miles distant, are burned each year.

The old style low-roofed greenhouse, in which plants were grown in waist-high boxes, has been superceded by large, high-roofed houses, in which the crop is grown on the ground, the same as in outside gardens, as the buildings are sufficiently spacious to permit using a team for plowing and manuring the soil. On a recent trip back East, Chase was surprised to see gardeners walking in trenches near the walls of low-roofed greenhouses.

COST OF GREENHOUSE

A double house, 80x200 feet, was built during recent peak-price times, when a box containing 50 square feet of glass cost $7.50, although in antebellum days the same quantity could be had for $2.50. But profits made in selling high-priced vegetables more than justified the expenditure. The entire cost of the double house and equipment was $8000, of which $3000 went for glass alone.

The soil used in the greenhouses is composed of two-thirds sediment and one-third stable manure. The latter is allowed to rot one year before being used. For a while it is forked over once a week to prevent burning or "fire fanging." Potash and acid phosphate are added to the soil.

GREENHOUSE CROPS

Tomatoes and cucumbers are the two main crops grown in the greenhouses. After the plants have been removed in August, the ground is covered six to eight inches deep with manure. In November the ground is plowed and leaf lettuce, spinach and radishes planted.

These crops are removed and tomato and cucumber plants set about March 1. Bonnie Best is the standard tomato grown. Livingstone's Globe is being tested, but is irregular in shape and off color. Mosaic, a new leaf disease, is giving considerable trouble.

Tomato plants are trained up a twine string to a central stem, all side branches being removed and a fruit spur left every eight inches—a half dozen to each vine. One plant will yield six to ten pounds of fruit, which brings 25 cents a pound at the beginning of the season, the price soon dropping to 10 cents. In a greenhouse 40x 200 feet—one-fifth of an acre—six tons of tomatoes, worth $1500, have been grown. Four acres of field tomatoes are raised.

Cucumbers are ready for slicing by the middle of April and are harvested continually from that time until August. The market opens at $3 a dozen for the fancy grade—8 to 12 inches—but soon drops to $2 and later to $1 and to 75 cents. Abundance is the main sort grown, but five new kinds are being tested. Only one of them promises to be a winner, the Deltus, a dark green variety with blunt ends. It packs well and holds its color, apparently being a great improvement over the older sorts. The seed costs $5 a hundred.

Tomato and cucumber seeds are saved; also some cabbage. Early fall

(Continued on Page 15)

Fall Irrigation
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Are you prepared? Liberal applications of water in orchards during the Fall months STRENGTHEN and REVITALIZE the trees, assuring a heavy crop the following year. This increase in your next year's crop production will go far toward paying the cost of installing an efficient pump. You can reap the profit of this increased production by installing a LAYNE & BOWLER PUMP Now! Get in touch with our water engineers at once.

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Something New in Colonizing---A Big Man and a Big Idea

By Albert J. Mason

HELP me to help myself!

This is all that any ambitious, self-respecting American asks. Such a man scorns charity or paternalism. But he is quick to recognize and grasp a real opportunity to succeed by his own efforts.

Here, then, is the keynote of one of the most interesting colonization projects in California. Perhaps you have heard of "Adelanto"; probably not, however, for the man who conceived and created Adelanto is not of the publicity-seeking type.

In these days of "State Land Settlement" and government aid for homesteaders, it is encouraging indeed to find in California, projects developed with "private" capital and enterprise, which depend for their success upon the success of the settler, and which are founded upon a permanent system. Such a project is "Adelanto."

Courage and initiative of a high order were essential to the development of the Adelanto plan. These attributes were supplied in good measure by E. H. Richardson, widely known in electrical circles as the inventor of the "Hotpoint" iron, and head of the great factory at Ontario (San Bernardino County, California) which bears this name.

For years Mr. Richardson made regular trips through the famous Cajon pass in the San Bernardino Mountains to the district known as the Victor Valley and long before he invested in desert real estate, he had succumbed to the peculiar charm of this "land of grays and purples."

With his brother, J. R. Richardson, he now controls more than 6000 acres of mesa land about eight miles from Victorville, the nearest railway station, and 40 miles north of San Bernardino.

Here, within the shadow of "Old Baldy (Mount San Antonio) and at the edge of the forbidding yet alluring desert, irrigation has wrought a miracle.

"And he gave it for his opinion that whoever could make two ears of corn or two blades of grass to grow upon a spot of ground where one grew before, would deserve better of mankind and do more essential service to his country than the whole race of politicians together."—Jonathan Swift in "The Voyage to Brobdignag" (Gulliver's Travels).

OPPORTUNITY RECOGNIZED

Richardson ignored the usual ridicule of certain observers, who had lived next door to opportunity all their lives without recognizing it. In the choice of a name for the ranch and townsite may be found an indication of the spirit in which they were conceived. "Adelanto" means "I advance," "I improve," or "I go ahead."

But perhaps the best suggestion of the character of the Adelanto idea, is the plan initiated for "settling" the new community. (Nearly every resident is a land owner.)

"We are more interested in securing settlers of the right sort than in simply making sales," asserts Mr. Richardson. "One of our principal advantages is the low cost of our land. With raw land available at $30 to $50 an acre, it is possible to establish a young orchard, leveled, planted and ready for irrigation, at a total cost of not more than $100 an acre above the investment in land and water stock."

As in all successful farming projects, good soil is the foundation upon which the entire structure is built.

At first glance, Adelanto soil appears to be nothing but sand. This possibly accounts for some of the aforementioned derision on the part of unbelieving early inhabitants. But after many trips into this fascinating region, Mr. Richardson was convinced that only the addition of water was necessary in order to produce bumper crops.

He knew the surface sand was only superficial and that a few inches below lay a subsoil rich, heavy, and with good moisture-holding capacity. He believed the sandy surface would prove to be an asset rather than a liability.

Early farming operations demonstrated the truth of his theory. As the land is plowed and worked over, again and again, sand and sub-soil become thoroughly mixed, resulting in the formation of a sandy loam of excellent texture.

WATER EASILY PUMPED

Unbelieving scoffers received their greatest shock when water for pumping was discovered at a depth of 150 feet, but in order to assure the development of a sufficient supply the company has reserved large areas of land solely for water development purposes.

The interests of land owners were protected further by the formation of a mutual water company, with complete distributing systems, electric pumping plants and storage reservoirs. A reservoir is provided for each 160 acres. Each land owner, through his ownership of water stock, becomes a part-owner of the entire system. He may, however, drill additional wells upon his own land if desired. On the other hand, the water company has the right to drill upon the land of any stockholder by making proper compensation, and to use the water so developed for mutual benefit.

A water district has been created, just as in the case of "gravity" development. Miles of concrete pipe, manufactured on the ground, have been laid for irrigation. Probably no agricultural project, dependent upon pumping, has a more equitable system.

COMPRESSED AIR USED

Because of the provision of reservoirs, it is possible to pump continually, night and day, during the irrigating season. A unique system of pumping involves the use of air compressors. The compressed air method was adopted for the following reasons:

1. There are no moving parts except an electric motor and air compressor which operate with very little attention and upkeep expense.
2. A group of wells can be operated from a single plant at any distance within a mile of the single plant.
3. No amount of sand flowing with the water injures the equipment of the wells which consists of nothing but stationary iron pipes.
4. Should the wells become clogged, the air system is advantageous in cleaning them.

One such plant has a capacity for pumping 75 inches of water from a depth of 150 feet.

We have seen that the "settler" begins with cheap land which, purchased upon easy terms, calls for a minimum initial investment. Likewise, he has acquired permanent and well-defined water rights and is not required to drill his own well.

Still, not satisfied with these advantages, the creators of Adelanto have provided the one "missing link" of many unsuccessful projects. They have given steady employment at fair wages to each colonist who desires it. This makes it possible for the man of moderate means to earn wages during the time when he is waiting for his own orchard to come into bearing.

Furthermore, it inspires confidence, and interest in the improvement of the community. It enables each buyer to receive pay for assisting in developing adjoining lands, thus increasing the value of his own. It makes for contentment and prosperity, and best of all, for permanency. The employment provision is made possible through the development work carried on by the holding company. New orchards and vineyards are being established annually.

IDEAL PEAR CONDITIONS

Pears promised greater returns per acre than other crops, and consequently most of the cultivated area is devoted to this crop. One advantage cited in the development of such a project is the absence of fruit tree diseases and pests commonly encountered in the more highly developed sections.

The altitude is 2900 feet. The summers are warm with cool nights, and in winter there is an occasional light fall of snow with frequent frosts, the thermometer sometimes dropping as low as 10 degrees above zero. Pure, dry, desert-mountain air, combined with the abundance of sunshine, makes the climate not only healthful, but also ideal for the production of pears, apples and grapes.

The success attained with the latter fruit, in fact, has been amazing even to those familiar with the productivity of the soil. That the ordinary valley varieties of grapes commonly grown in California would make unusually rapid growth and produce enormous crops of high grade fruit, at this altitude, was a surprise even to the most enthusiastic Adelanto boosters.

Three-year-old Thompson seedless and Sultana vines were observed which grape experts predicted would yield at least 4 tons per acre. It is planned greatly to increase the planting of grapes.

About 300 acres has been planted to fruit. The oldest trees in the Adelanto district are 8 year old Bartlett pears, which have produced several heavy crops of the highest grade fruit. The pear crop was sold last year at an average price of $85 a ton, the highest grade bringing $140.

Apples also thrive at Adelanto, the principal varieties being Rome Beau-

Four-Year-Old Bartlett Pears on Former Desert Land

ty, Delicious, Jonathan, Winesap and [illegible] Greening.

PROFITABLE SIDELINES

An important "sideline," and one which may be combined very readily with orchard development, is turkey raising. Adelanto producers raise 75 to 90 per cent of the young poults, the climate being apparently ideal for their development. Barley, produced without irrigation, "makes" sufficient grain to carry the flock during the finishing

E. H. Richardson

period, while natural range and a little patch of alfalfa provide additional sustenance at low cost.

Goats also thrive under Victor Valley conditions. Perhaps one-third of the families residing at Adelanto depend upon goats for their milk supply, while one resident maintains a commercial herd of Angoras.

Like all similar districts, Adelanto has strong winds. But it is the contention of those familiar with weather conditions the year round, that the prevailing winds are not as severe as those experienced on the south side of the mountains before windbreaks were established.

Young trees, in fact, grow straight and strong without the protection of windbreaks, which, although generously planted about the newly-developed land, in most cases have not yet attained maturity.

In addition to the planting of locust windbreaks, several miles of shade trees border the roads, and a park has been laid out.

The shade trees are planted 16 feet apart, with the idea of cutting every other tree for firewood when thinning becomes necessary.

To Mr. Richardson and his associates, aside from any financial reward they may receive, has been accorded the satisfaction of creative effort.

In this hobby, conducted aside from the regular business of manufacturing, they merely have carried out and applied the principles of manufacturing in a little different way.

LIKE A FACTORY

In the factory, from raw matcriais, irons and scores of other electrical appliances are produced.

At Adelanto the raw materials are climate, soil, water and the eternal desire of men to own land of their own. Combining these "materials" in the proper proportions, and after a formula carefully worked out in advance, E. H. Richardson and those who have become interested in his unique development project are "manufacturing" new wealth for California and America.

To form a prosperous settlement of contented, ambitious fruit growers where formerly only weird "Joshua trees" stood guard over the open spaces is an achievement that is not unrecognized in his community, where Mr. Richardson is held in highest esteem as one of its most beloved citizens.

The time has come, however, to give the story the wider publicity it deserves, a privilege gladly exercised by ORCHARD and FARM.

Long live Adelanto!

"Where Once the Joshua Tree Stood Guard"

Above—Three-year-old vineyard at Adelanto, carrying crop this season estimated at four tons per acre. Many observers have expressed surprise at finding apparently ideal conditions for grapes at this altitude. Below "Bastille Avenue," the main street of Adelanto, showing six-year-old shade trees. A wonderful example of the magic of irrigation!

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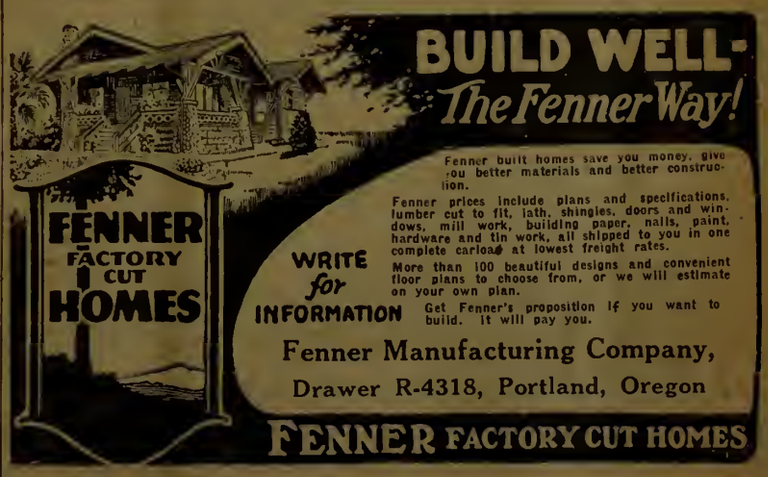

FRUIT TREES

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In answering Advertisements please mention Orchard and Farm

"BOB" JONES' CORNER

Little Stories of Farming

By Robert E. Jones

Contributing Editor of Orchard and Farm

Keeble's Method—Dick Keeble of San Jose, has demonstrated how a man may pull himself up by his bootstraps. In Keeble's case the particular kind of bootstrap comprised a combination of brains and energy applied to the soil. Fifteen years ago Keeble was worth nothing in the way of world's goods. Today he drives a high-priced coupe and supervises work on his pear orchards. In the brief period of fifteen years he has accumulated a fortune and he has done it all growing and shipping pears.

Robt. E. Jones

The story of just a success isn't worth much unless there is something in it that points the way to another. So I'm going to tell one little thing that Keeble does which has enabled him to succeed. He makes the soil between the trees work while young trees are coming into bearing. There are many farmers who will say this cannot be done successfully, but Keeble has demonstrated. He makes a developing pear orchard pay its way through intercropping.

One of the chief crops grown by Keeble in his young pear orchard is green corn. Haywards, on the outskirts of Oakland, is an auction market for green corn and from Haywards, "roastin' ears" are distributed throughout the Bay district. So Keeble grew "roastin' ears". Seldom did they net him less than $100 above the cost of production. One year, when he planted late corn and it came on the fall trade, he obtained a gross of $240 an acre and a net well above $100. Keeble urges all farmers to plant intercrops while their trees are young. Of course, the farmer must be careful not to draw nourishment from the trees, but this may be avoided by the use of careful methods.

Heavy Wheat Yields—Some remarkable yields of wheat are being obtained on Sacramento River bottom lands this year. The report has just reached the writer of one field of early Baart wheat, totaling 120 acres, which produced 27 sacks or more than 60 bushels to the acre. Of course these bottom lands are too rich and valuable as a general rule to be used merely for wheat, but the wheat yields are an index to their fertility.

Growing Mushrooms—I. P. Willits, Master of the Pennsylvania State Grange and a personal friend of Gifford Pinchot, was a recent visitor to California as a guest of Harold Buckman of Sacramento. The writer had the pleasure of dining with Willits and learned much of interest from him. Among other things Willits states that the Farm Bureau is stronger out here on the Coast than it is in some of the eastern states, but it is gaining ground there. The eastern leader has a general farm in Pennsylvania and two of his important crops are mushrooms and peonies, both of which are shipped to the New York market. He also has some Holstein cows and hogs and grows crimson clover. Willits lives at Ward, about 20 miles from Philadelphia. He states the labor problem is not very acute there. Negro labor is used quite generally on the farms. He was much interested in the Japanese problem of California and much in sympathy with the California attitude. After seeing the sights in this State, Ward left for the Pacific Northwest and Alaska.

Some Traveler—Bob Wilson, Secretary of the Farmers' Legislative Bureau, is getting to be quite a traveler these days. Only recently he returned from a trip East as Secretary of the commission which investigated various colleges of agriculture with the view of recommending a better plan for California. Now he is to go to Washington again on an important agricultural conference. Wilson expects that the Agricultural College Commission will hold a number of hearings in California to learn what the California farmers think may be done to improve the institution at Davis and Berkeley. None of the members of the commission are voicing their ideas just yet as to just what should be done. In the meantime much has been accomplished to advance the standing of the school. One hears on all sides favorable reports of Dean Hutchinson, who recently took charge at Davis.

May Open Feather—Farmers of the Sacramento Valley are much interested in the report that the War Department is again considering opening the Feather River for navigation from its mouth near Karnak to Marysville. This river runs through one of the richest belts of soil in the Sacramento Valley and is now lined by prosperous farms. Years ago it was navigable, but in recent seasons "snags" have been allowed to accumulate, thus making it dangerous for steamers. Were the Feather cleared of snags, it is thought a heavy tonnage of farm products would be moved from its banks.

A Poland China Shrine—From Washington, through Tom Brown, now Managing Editor of the National Coal Review, I learn that at Lebanon, Ohio, a monument has been erected and dedicated to the men of Warren County who developed the Poland China hog, now numerically supreme among the breeds in the United States. Miss Mary Hankinson, local poet, wrote the following to commemorate the occasion:

This spot will be the shrine
For Poland China swine,
Which we esteem;
Tributs to those whose skill
Labored with earnest will
This vision to fulfill,
The hog supreme.

Ohio, 'tis of thee,
Great land of Miami,
Of thee we sing
Land where the corn grows tall,
Land where the hogs enthrall,
The State that beats them all,
In everything

Buckeyes all down the years,
Honor the pioneers
Whose names we crown.
Their labors are the guide
To all this Nation wide,
And now we point with pride
To work well done.

We here in this fair land
Unveil this stone to stand
Till time shall cease.
And may our fa'rite breed
Always as ever lead
Till all their worth concede
O'er land and sea.

Milk for the Japanese—Discussing the possibility of an expanded market for California dairy products recently, Sam H. Greene, Secretary-manager of the California Dairy Council, told me something of unusual interest. Greene says the Japanese Government is making it a definite policy to encourage the drinking of milk in that country. Science has pretty well demonstrated that lack of milk in the diet of the Japanese is at least partly responsible for the small stature of the "Little Brown Man". Every one knows now that milk contains the vital elements that stimulate growth. It is common knowledge that the Japanese want more livestock in their country. Some time back a representative of the Japanese Experiment Station came to this country in search of the best sheep he could buy.

Actress Becomes Successful Farmer—"From Footlights to Farm," would be the title of the transition of Mrs. Thelma De Verne Van, proprietor of Big Noise Ranch at Newman, Calif. Horatio Alger were writing the story. Mrs. Van is a real farmer to

day, with a 20-acre producing ranch under her direct supervision. Of course she has the advice and assistance of "Long John" Louailen, who manages a number of other farms in the vicinity, but to Mrs. Van belongs the credit of purchasing and paying for and now successfully operating "Big Noise" Ranch, under somewhat adverse circumstances. Some day I want to write a real story of Mrs. Van—this is merely to introduce her.

It was right after the San Francisco fire that the yearning to get back to the soil took possession of her. She was walking down from Fillmore street, where she and her partner had been doing a vaudeville turn, and chanced to pass a real estate office which offered 5-acre farms at $1 an acre down and $1 a month. Mrs. Van walked in and with $20 from her purse to start with, said: "Gimme 5 acres." She got the contract and talked and read "farm" in every city of the United States for three years after that. She induced a number of show people to buy and, finally, having acquired a great deal of "book learning," actually commenced operations.

"I'll never forget the first time we started to cut our hay crop," she laughed. "Say, that doesn't look right, I said. It doesn't look like the pictures. Mind you, the horses were walking out in the hay, trampling it down, and the knife was cutting toward the edge. So we stopped right there and went and got a picture. Sure enough, the mowing machine was headed around the field backward—we had cut the first swath and forgotten to turn around." That was lesson No. 1. Many have been mastered since.

Mrs. Van is a woman of remarkable personality and vigor. Many times attempts have been made to lure her back to the footlights, but "Nothin' doing," she says, "Me, for my own fruit and vine tree and I'll let 'The Rest of the World Go By.' I'm happy here with the cows and chickens, for 'This Is the Life.' No more living in Pullmans and hotels for me—I'll take my three squares right out in the open where I can hear the bees making honey for me." But Mrs. Van does entertain for her friends—and a royal entertainer she is.

Grow What the Market Demands

(Continued from Page 11)

rains, however, are apt to spoil cabbage seed.

Through daily market reports from Portland and Seattle, and trade journals, Chase keeps close tab on the vegetable market. The local market does not follow city changes immediately, which gives Chase a chance to profit by the fluctuations. Price slashing is left to small competitors, who are learning that it pays to maintain the standard market price set by Chase.

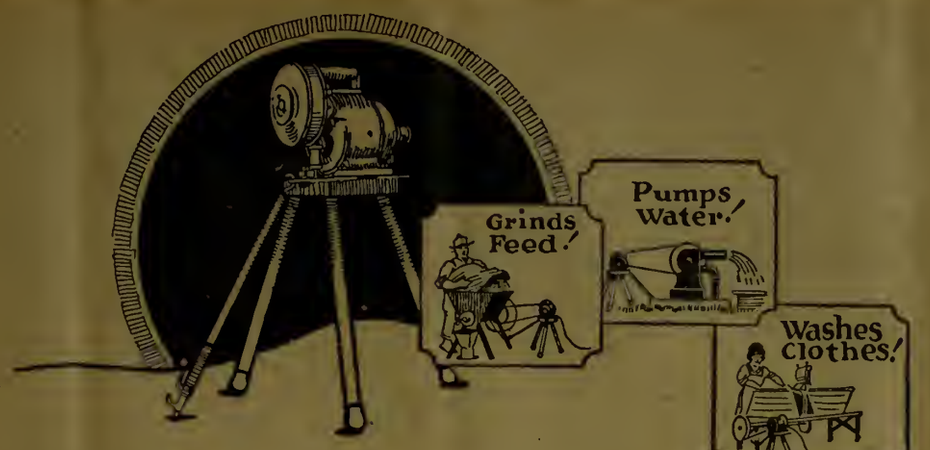
WHY HE "STICKS"

When asked for his opinion as to the relative value of the theory of gardening (as set forth in agricultural experiment station bulletins and other literature of the profession) and what he learns by practical experience, Chase replied that he considered it a 50-50 proposition. When interrogated as to why he continued in the vegetable business when it was being so ably carried on by his several capable sons, he replied, simply:

"I like to see things grow."

Effective Wind Break

A METHOD of shielding very young trees, which seems ridiculously simple to the uninitiated, is in general use among Victor Valley fruit growers. A thick crop of barley is planted between the rows. This serves effectually to hold the shifting top soil and to prevent both wind and sand damage to the young trees. The grain, when plowed under, also serves to increase the humus content of the soil and to improve the improvement in texture and water-holding feather "biovision" [illegible] are quite generally [illegible] young trees.



Let the

"Electrical Hired Man" do your chores

The "ELECTRICAL HIRED MAN"—a 110 volt portable Power Stand of ¼ horsepower—will operate much of your farm machinery.

Besides supplying the power for such chores as pumping water, grinding feed, cleaning grain, clipping stock and grinding tools, the "ELECTRICAL HIRED MAN" will run washing machines, churns, ice cream freezers, etc.

Much of the heavier work on your farm can be handled best by heavier motors. With each installation you will better appreciate the advantages of power-operated equipment.

Our representative in the nearest P G and E office will be glad to give you the average cost of operating different sized motors. *Drop in and talk it over the next time you are in town.*

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P · G · and E ·

"PACIFIC SERVICE"

P-05:8-6 Farm

Big Money Boring Wells

One Man One Team

Have water on your own farm. In spare time make wells for your neighbors. It means $1000 extra in ordinary years, double that in dry years. No risk—no experience needed.

Outfits for Getting Water Anywhere

Earth augers, rock drills and combined machines. Engine or horse power. *Write for easy terms and free catalog.*

LISLE MFG. COMPANY
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Mounted on Wheel Easy To Move

10-Year Guarantee Cash or Terms

Try for 30 Days

Ottawa $69

New Log Saw just built. Saws 8-in. logs as well as 5-foot logs. Start or stop saw—engine runs on. Use Four-cycle Engine for other work. Shipped from factory or nearest of nine branch houses. Write for full particulars today.

OTTAWA MFG. CO. 2351E Wood St., Ottawa, Kansas.

CORN HARVESTER Self Gathering for cutting Corn, Cane and Kaffir Corn. Cuts and throws in piles on harvester. Man and horse cuts and shocks equal to a Corn Binder. Sold in every state. Price only $25 with fodder binder. The only self gathering corn harvester on the market, that is giving universal satisfaction.—Dexter L. Woodward, Sandy Creek, N. Y., writes: "8 years ago I purchased a Corn Harvester. Would not take 4 times the price of the machine if I could not get another one." Clarence F. Huggins, Speermore, Okla., "Works 5 times better than I expected. Saved 40 dollars in labor this fall." Roy Apple, Farmersville, Ohio, "I have used a corn shocker, corn binder and 2 rowed machines, but your machine beats them all and takes less twine of any machine I have ever used." John F. Hang, Mayfield, Oklahoma, "Your harvester gave good satisfaction while using filling our Silo." K. F. Ruegnitz, Otis, Colo., "Just received a letter from my father saying he received the corn binder and he is cutting corn and cane now. Says it works fine and that I can sell lots of them next year." Write for free catalog showing picture of harvester at work and testimonials.

PROCESS MFG. CO. Salina, Kansas

Say: "I saw it in ORCHARD and FARM."

Don't Overlook the "Farmers' Classified Market Place"—A Feast of Bargains, Page 30.

THE STORY'S IN THE PICTURE

THIS FOUR-WHEELER is "walking right along" with its big gang of tillage tools.

THE GOOD OLD SUMMER TIME has joys peculiar to the season. "There ain't gonna be no core." (Courtesy, Fresno C. of C.)

THIS MOTHERLY OLD HEN, denied the right to hatch a brood of her own, adopted a litter of fox terrier puppies. (International Photo)

WATER TRANSPORTATION is the rule in the marvelously fertile district "down river" from Sacramento. (Courtesy Holland Land Co.)

"CLOVER'S" BIRTHDAY PARTY. The famous old race horse was presented with a rose for each one of his 31 years. (International)

IN THE HOT VALLEYS, this type of farm house, with screen porch extending around three sides, has proved exceptionally popular.

RECEIVING CROP REPORTS by wireless. Charles Daugherty, an Illinois farmer, "listens in" on daily broadcasts dealing with the market situation. (International)

FIRST ASPARAGUS PLANE. This airplane load of asparagus arrived in Framingham a few hours after it was cut in the hothouses of New Jersey. Aviation enthusiasts predict a big field for the airplane in transporting fresh fruits and vegetables. (International)

THESE TOGGENBURG MILK GOATS are a [illegible] Miramon and Lasalle. These sheep [illegible] 6 of this number.)

Why I Use Cover Crops

FIRST PRIZE LETTER

THE planting of a cover crop is one of the least expensive and easiest ways of keeping up the fertility of the soil. We have used various crops for this purpose, but those giving best results are species of the legumes, such as cow-peas, melilotus, vetch or clover. Rye, oats, barley or even weeds will help some by adding humus to the soil, but the legumes, with their nitrogen-gathering power, are better. The nitrogen-fixing bacteria live in the root tubercles, and when these plants are plowed under, by their decay, enrich the soil with nitrogen.

If the cover crop is sowed in the fall, it will grow through the California winter, and no real crop-growing time will be lost. It is important, however, that it be plowed under in the spring and not allowed to use up the precious moisture. A cover crop in an orchard in the summer time would be almost as bad as a crop of weeds, and do more harm than good by taking the moisture from the trees.

PEAS IN WALNUT GROVE

One fall we planted Canadian field peas on our ten-acre walnut ranch. This was before the war, when the price of such seed was much lower than during recent years. There resulted a rank growth—a beautiful sight—and the peas were plowed under when in blossom. It was hard to tell whether we had any more nuts the following season than we would have had without the cow-peas, but we felt assured that they were of a better quality. We had few perforated nuts and culls, when many of our neighbors who had not fertilized complained of having a high percentage. For many years we have put the stable manure from our four horses on the walnut ranch. One of our neighbors once said, "How is it you seem to have such a high-yielding walnut orchard when you give it as little care and cultivation as anyone in the neighborhood?"

We attributed this to the fertilizer each year—the fallen leaves turned under, the application of all available stable manure and an occasional cover crop.

In the fall of 1920 we sowed Melilotus Indica on a five-acre field which we had bought. Knowing it had been farmed by tenant farmers for years, we felt it needed a good coat of fertilizer. The Melilotus made a vigorous growth and was plowed under when it commenced to bloom. In the spring of 1921, prices being so uncertain and farm work crowding, we decided simply to plant this five acres to pumpkins. This would require little expense for seed or cultivation. Such a crop of pumpkins! They netted us $50 per acre without any irrigation—were hoed only once and weed-knifed a time or two. No doubt the melilotus helped to make them grow so well. And this spring the dark, rich green color of the field corn planted there and now waist high without any irrigation so far, testifies to the plant food still in the soil.

CONSERVING PLANT FOOD

Two years during the war we raised beans on a fifteen-acre field. These, of course, were harvested, threshed and sold. But the straw and stubble and roots were plowed under. Thus we had the satisfaction of feeling that our soil was being built up instead of depleted.

The same is true of an alfalfa field. When it comes time to plow up an old alfalfa field, one has the best kind of a cover crop, with no extra work or expense. This always makes an excellent seed bed for most any kind of a crop. We have several times followed alfalfa with a crop or two of potatoes. And, if properly cared for, the yield on such ground is always good.

Without doubt, it pays to fertilize. It is said that in Europe a peasant's wealth is measured by the size of the manure pile. Most all farmers agree that there is nothing better than barnyard manure. But this is not always available. Commercial fertilizers give quick results, but they are usually high priced. Frequently, therefore, the farmer will find that a green cover crop is the most practical way of restoring and building up the fertility of his soil.—George J. Michener, El Monte, Calif.

Subsoiling and Fertilizing With Mustard

SECOND PRIZE LETTER

I HAD a strange and new experience two years ago which I intend to repeat this fall.

I had about 1½ acres of land that flooded and baked every year, as it was adobe soil, and it refused to grow anything except wild oats, so I had it seeded to mustard, which acts as a "subsoiler," the roots going to a considerable depth.

Some said that was a crazy thing to do, and asked why I did not sow clover, but anyway I sowed mustard, and irrigated the ground when the stuff was about four inches high, I had it plowed under. This was in August. Then I let the land lie idle until November.

I was working in a cannery during the tomato season and the Manager asked me if I would sow the new fall spinach for the cannery if he furnished the seed and paid me 1½ cents per pound for the spinach. I agreed, as did many others, and in November I seeded this 1½ acres to that vegetable. In December, a cannery man from Los Angeles visited the ranch, and surveying my crop, said frankly, "Wouldn't give 25 cents for the whole thing."

But by January 15 it presented a wonderful sight! Tall, rich, tender spinach—and the ground was a mass of green.

The cannery decided not to "run on" spinach, as mine was the only crop worth gathering, and the Manager gave me permission to use mine as I wished. I furnished three Stockton vegetable stores with the entire output at 5 cents per pound, and some was sold in other places.

That little "worthless" piece of land

(Continued on Page 25)

Winners Announced in Cover Crop Contest

MANY valuable and interesting letters on cover crops were received from subscribers. The judges have awarded the prizes as follows:

FIRST PRIZE, $20....Geo. J. Michener, El Monte, Cal.
Second Prize, $10....Emma J. Torbert, Stockton, Cal.
Third Prize, $5.....D. R. Ruble, Salem, Oregon.
Prizes of $2 each are given the following: Mark H. Reasoner, R. F. D. H, Indianapolis, Ind.; Jerome Fellows, Fresno, Cal., and Frederick R. Paulson, Los Angeles, Cal.

Unfortunately, space is not available for publication this month of all the letters, but others will appear from time to time.

Prize winning communications entered in the "Pin Money" contest for women readers, are published on the Household page of this number. Announcement of winners in the latter contest was made in the July issue.

Another contest, conducted especially for our boys and girls, is concluded this month, and the names of the fortunate competitors who submitted prize-winning photographs are announced elsewhere in this issue.—The Editor.

A Call to Exacting Farmers
(Those who know how to farm and how to figure)

You
Come to Clarksburg
where
72%
of the land sold to date has been bought by former tenants or neighboring farmers.

Here you can grow—profitably—
Asparagus—2nd year crop paying $125-$160 an acre.
Pears—earliest; heaviest production; best for canning.
Beans—good for $100-$150 an acre.
Sugar Beets—count on $150-$200 an acre.
Alfalfa—yields run $100-$150 an acre.

Celery	Grain	Peaches	Peas
Cherries	Grapes	Plums	Seeds to Sell
Corn	Hops	Potatoes	Spinach
Garden Truck	Onions	Prunes	true diversity

Here in the last of the famous river sediment tracts of Yolo County, where the major development work is complete—pioneer cultivation, irrigation, water and rail transportation, townsite advantages, you can buy land, in parcels to suit, for as little as $25 an acre cash down; balance in annual payments at 6 per cent interest.

A post card will bring you details. Write it now.

HOLLAND LAND COMPANY
Clarksburg, California.
Offices also in San Francisco, 351 California St.
Sacramento, Capital National Bank Building.
Inspection trips from nearby points at our expense.

Do Your Own Concrete Building

Let us send you KWIK-MIX concrete mixer on 30-day free trial. See for yourself how easy it is to build your own concrete tanks, feeding floors, sidewalks, etc.

EASY PAYMENT
Send no money. Pay only $12.50 after 30 days' free trial. Balance $12.50 per month for three months. Cash price $45.00. Time payment price, $50.00. Order from this Ad or send for full particulars and interesting book on concrete.

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RELIABLE
DOGS AND CATS

Dogs for every purpose—all breeds. Will furnish photos of any animal. Angora and Persian cats. Also dog and cat supplies. Dogs boarded. Send for information. Graduate Veterinarian in attendance.

CARTER'S KENNELS
L. D. CARTER, Manager
1549-B East 12th St., Oakland, Calif.

There's only one Caterpillar Holt builds it

Here is the new high point of achievement in small tractors —"Caterpillar" T35 Tractor—big in power, enduring in service and versatile in performance. Weighing only 4000 pounds and measuring only 48 inches in width, it carries a 25 h. p. motor and delivers 15 h. p. at the drawbar. This has been accomplished by advanced design and improved qualities of steel and methods of heat-treatment. "Caterpillar" T35 Tractor establishes a new standard for dependability and long life.

Get full information and ask where you can see the T35 on display or in operation. Or ask about larger size "Caterpillar" Tractors—the 5-Ton, Western 10-Ton or big-power 75.

The HOLT MANUFACTURING COMPANY

Stockton, Calif. Peoria, Ill.

Los Angeles, Calif. San Francisco, Calif. Spokane, Wash.

Universal Brand Sprays

Will Control Citrus Pests

You can depend upon Universal Brand Sprays. Your use of them in combating Red Spider, Citricola and Black Scale will convince you of their prompt effectiveness and marked economy.

What is more—Universal Brand Sprays stimulate the trees and increase their resistance to the climatic conditions, thereby setting a good crop of fruit.

Right now is the time to use the following spray:

B. T. S., 15 lbs.	PER	B. T. S., 12 lbs.
TRIUMPH, 1½ to 2½ gals.	200	TRIUMPH, 1 gal.
K-seen GLUE, 1 lb.	GAL.	K-seen GLUE, 1 lb.
(For citricola and black scale)	TANK	(For Red Spiders)

4 gals. lime sulphur solution can be substituted for the above B. T. S. dosage.

(patented formulas)

Remember that Mr. Herbert, our assistant entomologist, is ready to inspect your trees and give specific advice relative to spraying. Call on him at our Los Angeles office.

Insecticide Department

Balfour, Guthrie & Company

Paul R. Jones, Entomologist

Los Angeles — H. W. Hellman Bldg.

San Francisco — Balfour Building

EXPERIENCE

TEACHES YOU BEST
WE USE THIS METHOD

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Bee Hives and Supplies

Headquarters for everything needed in the care of bees. Send for late price list and free booklet.

The A. I. ROOT COMPANY, Dept. B.

1824 E. 13th St., Los Angeles, Cal.

PACKERS OF AIRLINE HONEY

August Citrus Topics

By Vincent F. Blanchard

Irrigation Should Not Be Neglected

ABUNDANT rainfall came during the season of 1922 and subsoils which were dry during the past three years were soaked. But even with the great amount of rainfall, growers should not deceive themselves into thinking the water will be available over a long period of time and that irrigation therefore can be long delayed.

The amount of water a soil can hold depends mostly upon its type. A light, open type holds much less than a heavier type, and consequently the former will need irrigation sooner and more often than the latter. A greater percentage of the rain water has been stored up in the heavier soils within reach of the roots, while much of the water has pentrated so deeply into the lighter open types that it will never rise to the roots and is lost so far as they are concerned.

WEEDS STEAL WATER

Much of the water derived from the rainfall was lost early in the season as covercrops and weeds drew it from the soil. In fact, many groves (especially those injured by frost where the grower has become discouraged), are badly infested with weeds, even this late in the season. It is surprising how quickly a few weeds can draw mosture from the soil and actually weaken the trees.

It is too often the case that growers allow weeds to grow under the trees. This has the effect of drying out the soil at a time when every effort should be directed towards setting a crop of fruit.

More troubles are traced to either too much or not enough irrigation water than to any other factor. Growers should watch the moisture content of their soils zealously. The soil auger and shovel should be used frequently in determining moisture conditions.

Pruning Lemon Trees

SINCE the beginning of the citrus industry in California, pruning has been one of the most discussed and debated subjects. Perhaps the reason for this was because until lately, not much had been accomplished in determining the principles of pruning. In recent years, however, enough investigational and experimental work has been carried on to give us a better insight into the principles involved and therefore, a better understanding of pruning methods.

It has been contended by many pruners and growers of lemons that lemon trees should have far different treatment from orange trees. It was a common practice, especially until about three years ago, to cut back the top of a lemon tree each year in order to make the tree stocky and strong and to force out fruit wood in desired places. Many excellent groves were grown under this system. On the other hand, another school of pruners advocated a system which did not call for such vigorous cutting back, but rather for "thinning out."

NEW METHOD SUPPLANTS OLD

The Agricultural Extension Service of Los Angeles County for a period of over four years has been advocating and demonstrating the latter method of pruning. It is evident a much larger percentage of lemon groves are pruned by the thinning method than before, and entire districts which three or four years ago followed the heading back system now are using the thinning system.

With the thinning system an effort is made to prune the trees in such a way that they can grow more naturally. Instead of cutting back the tops each year in order to force vigorous growth late in the season the grower allows the tops to develop naturally, except for a certain amount of "opening up," to let in sunlight and to eliminate cross-branches.

EFFECT ON TREES

What are the differences in growth response under these two systems? With the heading back system, length growth is localized in the few buds near the cuts. In fact, so much vigorous development results, it is exceedingly costly to make good trees. The cut-back trees in comparison with the less-severely pruned trees are much smaller. Production to a great extent is decreased. Again, the trees are more subject to injury from cold weather.

On the other hand, trees on which the tops are not cut back, but which are merely thinned out produce less "length growth," while that which is produced is well distributed.

Such a tree, in comparison with one more severely pruned, will be larger and will produce greater crops. The leaves mature earlier in the season and there is much less danger of injury from cold weather. Pruning thus becomes a simple operation and the pruning bill is about one-half that incurred under the other method.

WHY WE PRUNE

It is now known we do not prune trees to produce more fruit but to regulate fruit production. An unpruned tree of almost any kind, will produce more fruit than one which has been pruned, but as a rule it will be of poor quality. The object of pruning should be more to maintain the tree in a healthy condition at all times and to regulate fruit production so that the tree will produce only that which it can mature properly.

The differences in response to the two systems are due mainly to the differences in amount of plant food manufactured by the trees. Investigations have shown a correlation between carbon intake through the leaves and nitrogen through the roots.

BALANCE THE RATION

Excess nitrogen intake over carbon results in vegetative growth and low fruit production. Deficient nitrogen results in weak and chlorotic leaves with low production. Excess carbon intake results in a healthy tree with high fruit production. Any system of pruning should provide for the greatest amount of carbon intake in order to keep the tree in a healthy condition and obtain a sufficient amount of fruit.

In order that a tree may manufacture plant food efficiently, the leaves should be dark green in color, mature for a long period of time, and exposed to sunlight. Vigorously growing foliage, pale green in color, and subject to rapid evaporation of water, is inefficient in its ability to manufacture plant food. The heading back system tends to produce the latter type of foliage; furthermore, lacking the greater amount of foliage, the trees cannot produce enough plant food. On the other hand, trees pruned by the thinning system do not produce more vigorous growth but mature their leaves more quickly. Consequently such trees produce large quantities of plant food. Therefore, they are able consistently to produce greater crops than those pruned by the heading back system.

Scale Control

THE time is near at hand for the beginning of scale control. Growers are now making their contracts for fumigation.

With the great damage to citrus trees and fruit by the January freeze it is probable that less fumigation will be done this season than usual. In fact, some growers in their effort to cut down expenses are contemplating skipping this season of scale control.

However, the production of citrus fruits is a "long time business." And it has been the experience of the most successful growers that in the time of adversity we should continue the

regular horticultural practices that trees may be maintained in a healthful and productive condition. It would surely be a great mistake to "pass up" fumigation this season if it is needed.

There is still the temptation for growers to find an easy way out and to rely upon spraying rather than fumigation for the control of scale insects. Wherever spraying has been employed as a check against fumigation, and careful records kept of results, the evidence has been in favor of fumigation. It is true that fumigation is not perfect in its control, and it seems as true that there is no other method as successful as fumigation.

Excess Water and Fumigation Injury

MORE troubles with citrus trees are traced to water problems than to any other factor. Excessive water especially is decidedly detrimental to citrus trees. One of the difficulties caused by excessive water, which has not been carefully considered in the past, is fumigation injury to trees where too much water had been applied.

M. B. Rounds, Horticulturist for the Azusa Foot-Hill Citrus Company, called to the attention of the Agricultural Extension Service staff of Los Angeles County the fact that trees at the upper part of the irrigation runs were severely injured by fumigation, while those below were not.

The rows are 900 feet long and the soil is a fine sandy loam. By the time the lower trees received enough water, the upper ones had received too much. An instance also was noted where some trees at the lower end in one tract, where water had accumulated in a low place at each irrigation, were severely injured by fumigation. The evidence points to the fact that excessive water weakens citrus trees. Weakened trees are always more subject to fumigation injury than healthy trees.

In order to obtain accurate data on the correlation between over-irrigation and fumigation injury, the Agricultural Extension Service for Los Angeles County has just started a project with the co-operation of Mr. Rounds, which will test out uniform applications of water as a check against the usual practice. Such a project should show the general value of uniform water application as well as aiding in the prevention of fumigation injury.

Standardizing Olives

By J. J. Hoey

ANY description of the activities of the California Olive Association would be incomplete that did not give serious mention to the accomplishments of the organization in the important matter of standardization of the ripe olive.

J. J. Hoey

The first steps were taken when the packers of the South came together in the early days of the organization in May, 1915, and the tentative standards then adopted, though limited in their scope, have never been abandoned. In the years that followed, the need for greater uniformity in sizes, grade names and containers was the thought uppermost in the minds of the really thoughtful and far-seeing people of the industry, as well as that of improving the quality of the ripe olive by every means possible to the end that the consumer would be assured of satisfaction whenever he purchased California ripe olives under the label of a responsible packer.

A LOGICAL ACTION

Therefore, it was the logical thing for the Association to take definite action toward determining and establishing proper standards to apply to California ripe olives, through the appointment of a committee to investigate the subject thoroughly and report its conclusions to the body of the Association. This committee, after laboring for many months, submitted its report to the annual meeting of the Association held in San Francisco on the 17th of last April, and after a very full discussion and serious consideration of the various recommendations by the most representative gathering of olive men ever held in the history of the olive business, the committee's report was adopted.

[illegible] a number of changes were made in the original, although [illegible] for the most part changes [illegible] in principle, and [illegible] points to be determined [illegible] through a series of exhaustive tests being made by the experts of the University of California, who are working in the closest harmony with the Olive Association in this important matter.

The result of this standardization work, conducted with the greatest care, and always in line with scientific knowledge and the best factory practice, will be to place ripe olives in the class of tested and dependable food products, true to name, size, color, weight, texture and declared quality. The standards as finally approved, will be accepted by the trade and the public the country over, and thus a long step forward will have been taken by an industry which has probably suffered more than any other in California because of the lack of uniformity in the pack and quality of its product.

HOW ASSOCIATION IS FINANCED

A word or two concerning the method of financing the work of the Association may be of interest. During the first two seasons when the organization operated under its new plan, assessments were levied on both packers and growers. In the case of the packer, the assessment was a certain amount on each case of ripe olives packed, and on the grower member the assessment was a stipulated amount per ton of olives delivered.

The collection from the grower, for economy of time and effort, was made through the packer who purchased the grower's fruit, this arrangement having been agreed to by the parties at the time the packer bought the olives in the field.

However, the olive market became so chaotic a year and one-half ago, that it was considered advisable to relieve the growers of any payment of assessments, and accordingly during the past season the assessment was placed entirely upon the packing members of the organization. The last annual membership meeting in April decided to continue this same arrangement for the coming year, and, at the same time, changed the assessment from a tonnage basis covering all olives handled, to a charge on each case of ripe olives packed, as was done the first two seasons.

This charge per case is higher on the larger size olives and lower on the smaller fruit, in keeping with the comparative value of the product, which sells strictly according to size.

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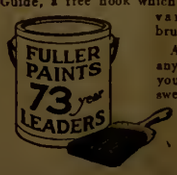

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Thirty Years With Pigeons---How to Raise Them Profitably

I shall treat of the pigeon in the following topics: General origin, breeders, feed, green feed, grit, salt, water, bathing, housing, care, banding, disease, mating, nestings, gestation, hatching, colors and breeds.—T. E. B.

"I Have Much to Learn About Pigeons and Their Habits"

DESPITE his lifetime of experience as a fancier and squab raiser, the writer of this article asserts he is still learning. Mr. Berry receives hundreds of letters from persons in all walks of life who seek to learn the secrets of his success. Through ORCHARD and FARM he will attempt to answer all of the questions of the novice. The series of articles, complete, will constitute a textbook, in brief, on the subject of pigeon raising. It is suggested that subscribers save the articles for reference. They are to appear exclusively in ORCHARD and FARM.—Editor.

By T. E. Berry

PROPRIETOR OF THE LARGEST MODERN SQUAB RANCH IN AMERICA
WRITTEN ESPECIALLY FOR ORCHARD AND FARM

THE ancestors of our diverse forms of the pigeon still exist in the "Rock Dove." This bird is found abundantly in Europe, Asia and China, its colors being like that of the blue varieties of the domesticated birds. The Rock Dove is a dweller in cliffs, roosting and nesting on the bare ledges. In India, immense flocks, half tamed, inhabit the mosques. For centuries in various parts of England partly domesticated birds have lived in the dovecotes.

These dovecote birds are not all of the "barred" type, many showing checkerings on the wing coverts, the first variation the Rock Dove shows in captivity. It is this innate tendency to variation that has given us the wonderful array of the modern breeds. Once the bounds of normal plumage are passed, almost any variation is possible. Other colors appeared which were quickly seized upon by the breeders. The slightest tendency to crests, feathered legs, frills or other abnormalities, was the signal for selection and experimental breeding, but the chief types of pigeons are a very old legacy from forgotten centuries.

Of the actual breeds of these old times we know very little. It is probable they would not be recognized today as the ancestors of our modern breeds, but the eastern countries became the birthplace of many types well known, such as the Fantail, Owls, Oriental Frills and certain types of the Tumbler, and many others, such as the Carneaux and Mailo de Caux. Most of these birds have been developed and greatly improved since their introduction.

TYPES OF BREEDERS

Pigeon breeders should be divided into three groups—those whose birds live in a state of semi-liberty, breeding entirely without control and receiving little or no attention; those who breed squabs on a commercial basis and have no interest in their birds beyond the weight of edible flesh they can produce, and those who keep pigeons because they like them, without too close an eye upon the account book.

Of the first there is little to be said other than that which we have all observed from time to time—that they are a common nuisance, and, as far as the writer is aware, have no redeeming features. The squab raiser has the best excuse of all, if excuse be necessary, for he is the man who keeps his birds under wire and produces the finest meat mortal ever consumed. However, the "fancy breeder," or the man who keeps pigeons just because he likes them, is in all probability responsible for the improvements in the various breeds.

SUGGESTIONS ON FEEDING

The staple food for pigeons consists of grains such as whole corn, wheat, peas, milo maize, kaffir corn, buckwheat, rye, sunflower seed, and vetches. All grains should be whole and free from smut, mold and other imperfections. This is a very important precaution. The birds should be fed twice a day, but the grain should be kept constantly before them.

IS GREEN FOOD NECESSARY?

This is a point upon which many differ. I will therefore give my experience, to be taken for the good or left for the bad, as you may prefer. It has been my rule to advise the novice never to give green feed, as I believe you will agree a live bird without green feed is far better than a dead bird, which is the general rule when green feed is given out of season and proportion.

The writer has birds that for generations of hatchings never have had any green feed and apparently are as healthy as those that have received it.

The objection to it can be summed up rapidly in the fact that it is an extreme laxative and if fed in any quantity will cause death by dysentery. But if you must feed green feed, let it be not oftener than once a month and then use only green alfalfa or "cheese weed," these being, from my experience, the safest. Never use lettuce or other garden truck.

GRIT IS ESSENTIAL

Small grit, in the form of shell, gravel, lime, granite grit and charcoal should be always before the birds, the quantity the birds consume being astonishing, and trouble will follow if the supply is not kept up. Grit is to the pigeon as teeth to the man.

HOW TO GIVE SALT

Pigeons are well known to be very fond of salt. Most breeders keep in the loft a lump of rock salt, at which the birds work with great perseverance but small results. A better way is to use salt in the grit mixture. When they are accustomed to it there is no danger, but pigeons which have been deprived of it for some time may suffer from diarrhoea for a period.

WATER IS IMPORTANT

Water is most essential to the pigeon, both for bathing and drinking, and for this reason they should be supplied plentifully and often enough to insure purity.

THE HOUSING PROBLEM

In building or arranging a pigeon loft, much depends upon the nature of the birds to be kept. Flying birds do not require loft space necessary to those kept in confinement. In all events the loft must be light, dry and tight enough to preclude danger from drafts. It is of the greatest importance that the loft be made rat-proof, as the rat will eat squabs in preference to all other food. Individual perches of the inverted type should be placed about the walls, as the feet of the pigeon are adapted for sitting on flat surfaces rather than for clasping round objects; therefore, perches should be arranged in accordance.

ARRANGEMENT OF NESTS

Every loft has its own particular arrangement of nest boxes. There are a few points, however, on which we should agree. As pigeons in proper breeding condition usually have well grown squabs in one nest and eggs in another, it is necessary that each pair be provided with two nests. Each pair will select and hold its own domain, jealously defending it against all comers.

A Satisfactory Unit Pigeon House

ANY number of pigeons may be accommodated in a series of units of simple construction. Arrow at right indicates the "flight" compartment, covered with woven wire, where the birds exercise in the open air.

Arrow at left shows "loft" affording entrance to the flight, above the alley. The shed-like house at the rear is fitted with nests and is entered through door from the alley.

A single pair of pigeons, mated for life, select and occupy two nests, frequently having squabs in one and eggs in the other. Thereafter, despite the fact that many pairs are thrown together in one unit, each "family" remains in undisputed possession of its domain.

THE "FLIGHT" ENCLOSURE

If a "flight" is to be attached, this may be made of any size desired, but care must be taken to make it rat proof. The flight should be fitted with perches so placed as to cause the birds to take as much exercise as possible.

BANDING FOR IDENTIFICATION

Most breeders who keep and mate their birds systematically mark each squab with a seamless leg band. This is placed when the squab is four or five days old by pressing the three forward toes and passing the band over them and far enough up the leg to clear the hind toe. It can never be removed except by cutting, and serves to identify the bird through life. In addition thereto, when pairs have been selected and mated, a number band of the open type is placed on the left leg of the hen and one of the same number on the right leg of the cock, which identifies the mating. With such identification a record of the production of each pair can and should be kept.

PIGEON DISEASES

The ailments of the pigeon are few and can be credited to poor feed, which in my humble belief is the cause of canker, the dreaded disease of the squab. Colds in the old birds are due to poor housing, and if neglected lead to "going light" and, eventually, death.

Of canker little can be added to that which has been said, except that the writer has found olive oil a cure if given in time. And this I believe to be the only cure, notwithstanding the many remedies that have been advertised and recommended.

Canker is a mixed infection of rather mysterious origin, but probably is caused by a vegetable parasite, encouraged by inbreeding, dampness and heredity, but moldy grain is no doubt the true source. At any rate, the young are seen to be breathing and swallowing with difficulty. An examination will show a lump of yellow, cheesy matter in the throat. If this growth can be removed without causing bleeding and the spot treated with iodine, recovery may be aided, but most cases are hopeless and, as a rule, not many birds are saved.

THE MATING OF PIGEONS

Pigeons mate in pairs and normally are monogamous. Under conditions imposed by confinement the rule is often violated. Because of this fact, it is advisable to use the single mating compartment. Such a compartment should not be less than three feet square. Properly mated birds will generally prove faithful for life, except in the case of illness of one, when the other is very likely to seek diversion elsewhere.

Pigeons which have been separated as to sex are ready for mating at any time. The time for mating varies according to the climate and the temperature of the loft. When it is decided to start, the pairs (which, of course, have been carefully selected) should be placed in the nesting compartments they are to occupy.

Here they are left for three or four days—longer if necessary—until they are mated. If in good breeding condition, almost any cock and hen will mate at once. Some cocks are inclined to be savage, and such birds should be watched lest they injure the hen when first introduced. Aggressive cocks may be curbed and timid ones encouraged by the arrangement of barriers which will suggest themselves to the breeder. The mating completed, nesting material must now be supplied. The carrying generally is done by the cock and the arranging by the hen. Tobacco stems are the best nesting material. After about a week of tender "billing" and "driving," the first egg should appear and the following afternoon the second. Only two are laid for each hatching. It is usual for the cock to sit from ten in the morning to four in the afternoon, the hen sitting the balance of the day.

INTERESTING DOMESTIC RELATIONS

The bowings and billings with which the change is made form an interesting study in domestic relations. If all goes well the eggs should chip on the eighteenth day and in a few hours the young will emerge. It is a good plan to examine the nest at hatching time, as the young sometimes get into difficulties that are easily remedied.

If one appears to be having trouble in extracting itself, it may be gently assisted, but never removed entirely from the shell. For several days after hatching the squabs are fed on pigeon milk. This is formed in the crop of each parent and is present a day or two before the hatching is due. Then small grains are mixed by the parents with the milk, and at about ten days to two weeks the squabs are fed wholly on grain.

Pin feathers begin to appear at about ten days and soon the squab is covered with growing plumes. When the squabs reach the age of two weeks the parents, if in good condition, will begin

to think of a new nest, the same routine being followed as in the first case, with one exception. It now becomes the duty of the cock bird to complete the feeding and rearing of the squabs, and in addition thereto, to take his turn on the new eggs.

At about four weeks the cock begins to think of ridding himself of the double burden, and it is at this time the cock teaches the squabs to fly, bathe and feed, at the same time weaning the squabs. This generally takes about three to four days, and when completed the young are forgotten and seemingly disowned by the parents, their time now being taken up by the new babies. So it continues for an average of eight pairs per year, although the writer has known of cases where the routine has continued for fourteen months without a break.

Precocious birds show sex at a very early age and forward cocks will mate at three to four months. This should be discouraged, however, and birds should not be mated until at least five months old.

With all short-beaked pigeons, such as Owls, Orientals, Frills and short-faced Tumblers, as well as some others, it is customary to make use of "feeders." These are birds of known diligence and steadiness, which may be depended upon to rear the young if care will do it. Common pigeons and homers are well suited for this purpose.

(Editor's note—In his second article Mr. Berry will discuss colors and some of the more interesting breeds.)

Raising Guinea Fowls

THERE is nothing difficult about raising guineas on the farm. All they require is a little care and thought.

When three or four females to one male are kept, there will be little danger of the birds straying away and concealing their nests. The hens, if not disturbed too much, frequently lay in one nest day after day.

Of the several varieties of guineas, the white and light pearl are likely to be of more value for market, as they have lighter skins.

Young guinea hens usually begin to lay earlier than the older hens, but the old hens lay larger eggs and therefore their eggs are better for hatching.

HINTS ON HATCHING

Disturbing the nest invariably will break up broody hens and they will lay perhaps 40 eggs or more before they become broody again. From four to seven eggs should be left on the nest all the time, for if the eggs are all taken the hen may desert the nest for another one.

Especially in the latter part of the season it will require less care and food if the guinea hens are allowed to raise their own broods and usually they will manifest a desire to make their own nests after July.

In hatching, the eggs should not be over two or three weeks old. Fresh eggs, of course, will hatch most satisfactorily. If a chicken hen is used, the large varieties are the best, for they are able to cover quite a number of eggs. From 18 to 25 eggs may be given to each hen. A flock of sixty makes a good number for two or three hens to care for.

SHELTER NECESSARY

The young fowls should have a weather-proof shelter of medium size in not too sunny a location. If it is placed under a tree some distance from the buildings, it will allow the sun to strike them in the morning, but will furnish the necessary shade for them during the heat of the day. They will roost in trees as soon as they are old enough to do so.

Any ordinary good baby chick food may be given the baby guineas after they are 36 hours old, if they are not overfed. They should be fed three times a day until old enough to be put on free range; then a morning and evening feed will suffice. If not on range, they should be given plenty of green food.

There is usually a fairly good price for guinea fowls on the market, and since they hunt most of their food, the money received for them is principally profit. Besides, they consume any number of insects and weed seeds.—Pearl Hartman, Chittenden, Calif.

Summer Culling Is Important

SYSTEMATIC culling; that is, the handling and examining of every bird in the flock, should start about the middle of July or first of August and continue periodically about once a month until the middle of October. Generally speaking, systematic culling is not practical at other seasons of the year.

The principal object in summer culling is to eliminate the slacker hens, while the object in September and October culling is to observe and select the best individuals to reserve as future breeders. Health, vigor, size, trueness to standard type and color, as well as heavy egg production, are points to consider in late fall culling.

Some hens withstand the strain of heavy egg production and maintain good physical condition, while others "lay themselves out." The latter are of no use in the breeding pen and should be disposed of after finishing their laying season.

The first thing the culler wants to know when examining a hen in July or August is whether or not she is laying. Hens which are laying at this season of the year usually are kept, as the price of eggs makes them profitable. If, upon later examination, they are found to be medium producers [illegible] can then be disposed of.

[illegible] confined in the [illegible] they are to be [illegible] there is no house [illegible] be taken from the roosts and cooped the night before. In the former case a small coop may be placed at the runway where it will soon be filled. The door is then closed and the birds removed through an opening in the top with the minimum of disturbance. If a suitable house is not available, the coop can be used by the side of a fence with a portable frame. It is necessary to handle every bird and consider all characteristics to be discussed, before passing judgment.

A Big Deal

CALIFORNIA'S progress towards leadership in the tractor and farm implement business is emphasized by the recent transfer of the famous "Bain" wagon factory at Kenosha, Wis., to W. L. Dixon and J. F. Griswold, of Los Angeles.

These young men have been recognized by farmers and "the trade" as among the "livest" dealers in California, but their recent expansion into manufacturing on a national scale was a surprise even to their friends and admirers.

That they intend to maintain their California business and devote much of their time to their interests in this State is especially gratifying, for this program insures the conduct of the Eastern factory as a California institution, in management, if not in location. Agricultural interests throughout the Pacific West are wishing the enterprising partners all success in their undertaking.

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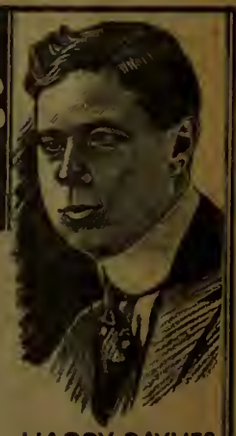

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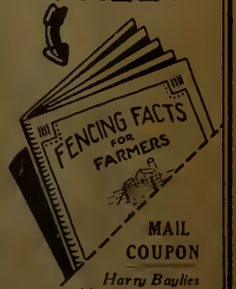

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THERE is a modern flippancy to the effect that, "What you don't know won't hurt you." It is also a fallacy. For instance:

The farmers of Kimberley were a disgusted, disheartened lot. They said the soil was too rocky to earn them a living. Some of them left. Others died in poverty.

And all the time their children were playing with diamonds.

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The Business Poultryman

IF, AS you walk down the street, you should accost each fellow pedestrian, you would find, no doubt, that one in five has been, is, or intends to be connected with the poultry industry. At least 20 per cent of the people are interested in poultry.

Some desire to build up a breeding flock only as a hobby; others keep a few hens in the back yard; but hundreds want the attractive financial returns, steady income and the independence promised by successful poultry husbandry.

ADVICE TO BEGINNERS

The man who intends to become a poultryman hears a variety of advice. There are many who have failed, or have sold out to keep from failing. The advice they give is to stay out of poultry work unless one wants to lose money. They assert, in the poultry business, money only changes hands, very little is to be made, and this only by "lucky" people.

The successful poultryman, on the other hand, advises a beginner to engage in the business only if he knows how, and to specialize in one branch. For some reason thousands of persons ignore this general rule, especially in California. Many eastern people, upon arriving in California to live, after having led an active life, have a desire to keep busy. They try raising poultry, knowing there is a good market here for both eggs and meat, and no cold winter to cut off egg production. Also, a goodly number of mechanics and tradesmen, tiring of their vocations, with no previous knowledge of poultry keeping, join the army of novices.

Later, when these people have failed, they form the class that hurts the poultry business. They tell how hard they worked, and emphasize the lack of proper returns.

KNOWLEDGE IS ESSENTIAL

Poultry work is like any other business; you must learn or you cannot succeed. Would you expect to manage a garage if you did not know the names of the parts of a motor car, or even how to drive one? Would you expect to succeed as a building contractor before you learned to estimate costs?

To succeed with poultry, there must be brain work, which must be dished up with a dressing of common sense, and the more one learns, the more one finds to learn. The beginner should subscribe to one or two good poultry magazines and a general farm paper. He should visit, study and work upon successful ranches. He should study Government and State bulletins.

This is a day of specialists in all businesses. In the poultry business the specialties are egg ranches, hatcheries, market poultry ranches, breeding establishments, caponizing plants, and other branches.

It is hard to say which one pays the best, but in each case it requires years of work to achieve a position of independence.

THE "MONEY CROP"

Specialize—but "do not put all the eggs in one basket"; every week should bring a sale to help with expenses. In each branch of poultrying there is a dull season—when either production or market price is low, and for this reason a sideline, or "extra crop" should be ready to help at this time.

For instance, a certain duck raiser was "hard hit" during the recent break in the market price of ducks, until a poultry buyer offered him 50 cents a pound for his capons. The greatest secret in poultry work is to "learn the markets." This man was not caught unaware.

This same lesson may be applied to the purchase of grain, lumber and other supplies. The price of eggs usually drops in the early spring but fryers, broilers and pigeon squabs are valuable then. The idea is to strike the "peak" of the market, or as close to it as possible, for that is where the "big money" is.

CAPITALIZE SPARE TIME

And again, the poultryman's "dull time of year" (if he has any) is the late summer and fall, when there is no incubating or brooding, and when a good holiday market for any kind of poultry is in view. The wise producer is ready at that time with an extra crop of market poultry.

Some egg ranchers raise broilers as a sideline. Others raise winter garden, some keep rabbits. One hatchery man raises hogs! Squabs make a very good "money crop." They require much less work than chickens, take up less ground space, and make a quicker cash turn-over.

Another sideline that fits in well, if one has the equipment, is that of rearing a month-old pullet. This should be part of the work of hatcheries which thus may have both chicks and young pullets in stock. Many persons prefer to purchase pullets of this age in preference to either chicks or grown birds, and, regardless of the breed usually there is no difficulty in selling.

However, the price of pullets of this age should not be less than $1 for Mediterranean breeds, and more for larger fowls. In connection with this branch of the business, it should be well to remember that the Anconas, Plymouth Rocks, Brahmas and Black Giants are forging ahead in popularity.

Bookkeeping is a daily function with every successful poultryman. It is necessary to keep accurate account of expense, production and sales. The more simple and practical the system, the better. One book will do to keep account of egg production of each pen for each day, with totals for each month and year. Use a second book for sales and expenses, and if you sell hatching eggs, chicks or breeding stock, reserve one section of this book for orders and deposits on orders.

MUST TAKE INVENTORY

Naturally, at the end of each month you will sum up the sales and expense, and count the difference as pay for labor. However, the poultryman cannot actually know how much he earns unless he takes inventory.

In any other business the manager takes inventory at least twice a year, and it should be done in poultry work although at present very few take the trouble to learn where they stand.

Some keep a card in each pen. One when a hen dies, make a cross on the card, or draw a line through the number which corresponds with her husband. Sick fowls, however, may be removed to the hospital, and fowls may

(Continued on Page 28)

Why Are There so Many Failures in the Poultry Business?

ALTHOUGH successful poultry raisers are numerous, the percentage of failures is said to exceed that of any other agricultural pursuit. Why?

The writer of this article, a practical producer and close observer, answers the question clearly—and incidentally gives some helpful hints for the man who is "in the game" on a business basis.—The Editor

Poultry Lore in Brief

A POULTRYMAN troubled with rats under the feed house, destroyed them with little trouble. He stopped up all tht holes except two. Then he attached a piece of pipe four feet long to the muffler of his auto. A piece of garden hose was attached to the pipe and the end inserted in one of the rat holes. He "stepped on" the gas, while his son with a club and a dog guarded the other hole. As fast as the rats were driven out by the gas, they were killed, either by the boy's club, or the dog. The four foot pipe was used to keep the hot gas from melting the rubber hose.

In selecting Rhode Island Red chicks for dark plumage colors, no attention is given to the color of body. The chicks with dark, amber-colored bills later will have dark plumage.

With Barred Plymouth Rocks the color should be black where it is to be dark, and white where white shows on the chicks. This is the sign of good color in the plumage.

A Leghorn man uses the following mash for laying hens. He has a bin holding about one ton, that he fills, then mixes as needed in this proportion:

600 Bran
300 Oatmeal
300 Cornmeal
400 Shorts
200 Beef scrap
100 Bone meal
100 Oil cake (old process)
50 Charcoal (fine)
20 Salt

For chicks he adds about one-third more of bran, oatmeal and charcoal.

If in need of lice preventative, consider tobacco dust. It is easy to handle, cheap and longer-lived than many other materials.

In starting a strain, do not use one hen and one male. Use a number of hens but all from one strain. This will give a greater choice among the offspring, and quicker results. In introducing new blood, use hens or one hen, mated with your male. Mate their offspring with your flock birds.

Prepare to carry a big supply of grain, and when the new crops are in, purchase enough of the more expensive grains needed, to last a year. This saves a nice sum, for when the new grain is on the market, it is cheaper than any other time of year, and later as the grain becomes less plentiful, the price naturally goes up.

To take chicks out of the incubators as soon as dry and place in a compartment, or in boxes where the temperature is slightly less than body heat, will prevent a lot of bowel trouble. If they are left in the incubators with the slower-hatching eggs from 16 to 24 hours longer, three or four times as much bowel trouble will result.

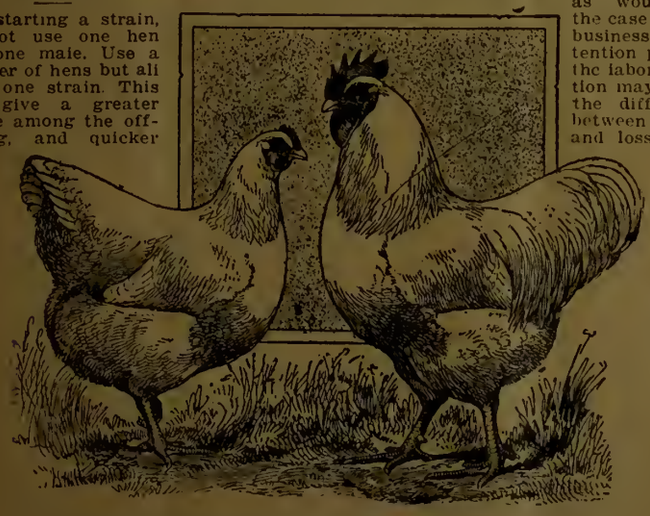
The Business Poultryman

(Continued from Page 22)

sionally get into the wrong pen, so that after a year these cards may not be accurate.

The poultryman's year begins when the pullets start laying—usually about November 1. Twice a year, the last of October and again the last of April, he should count his chickens and price them as the merchant prices stock on the shelves. "Fixtures," such as buildings and fences, should be depreciated at least 16 2-3 per cent when one year old, and an equal amount each year thereafter, for they will not last over six years without repairs.

Another subject of interest is labor. On many poultry farms any one under the owner or foreman is "just a helper." No consideration is given to hiring a man who has had previous experience with poultry, or, if such a helper is hired, he is seldom paid accordingly, as would be the case in any business. Attention paid to the labor question may mean the difference between profit and loss.



White Plymouth Rocks are growing in favor, especially among those who need a general purpose fowl.

How We Solved the Feed Grinder Problem

I BELIEVE readers of ORCHARD and FARM would like to know how we solved the feed grinding question on our place, the "Black and Blue Hatchery."

Every poultryman turning a feed cutter wants to do it by power, but many imagine the cost is too great or do not know exactly how to "rig" a motor or engine.

Our cutter is a No. 9, with rotary knives on the same shaft as the fly wheel, cutting upward. The fly wheel is 27 inches in diameter, 2 1-4 inch face. The crank handle is bolted in a spoke of the wheel. The frame is rectangular, with horizontal members about 1 foot from the ground.

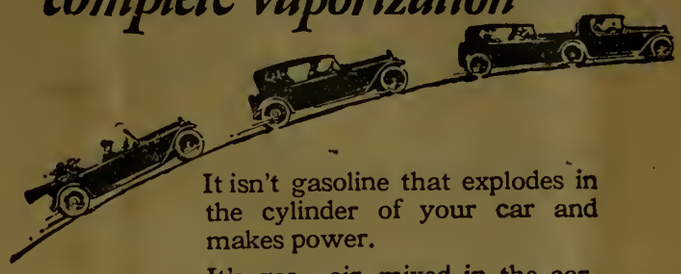
We bought a 1-4 H.P. new motor, 50 cycles, 110 volt, for $20; 1400 R.P.M. pulley, 4 inches diameter, 2-inch face. For 21 we bought 100 feet of No. 16 rubber-roof double cable. We had [illegible] cable. Our entire outlay, therefore, was [illegible]

First we tested the direction of rotation of the motor in order that we could set it to run the belt straight. Then we nailed a short piece of 1x12 board across the horizontal frame members to serve as a support, connected to the motor and adjusted as to length, with the motor in approximate position, which was changed while running until the belt ran true. Then the electricity was turned off and the motor bolted to the board.

It was found the frame needed a cross brace, which was supplied in a ½x3-inch board nailed to the side. Now it runs like a printing press, free of vibration or rattle and at a business-like rate of speed.

I think using the large pulleys a big advantage. The extra speed on the belt is not objectionable in any way, while higher tension that would be necessary on smaller pulleys is a constant source of trouble.—O. S. Proctor, Baldwin Park, Calif.

More mileage—
the result of *complete vaporization*



It isn't gasoline that explodes in the cylinder of your car and makes power.

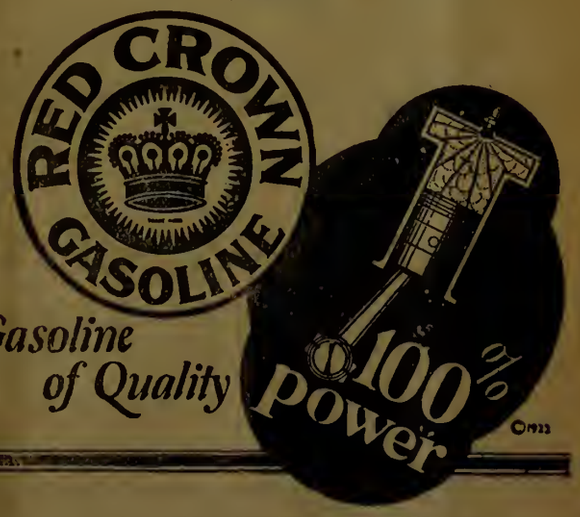
It's gas—air, mixed in the carburetor with gasoline to form vapor.

Red Crown gasoline *vaporizes completely*. It forms a homogeneous mixture with 12 to 16 times its volume of air. That mixture explodes cleanly and powerfully, leaving comparatively little carbon residue on valves, spark plugs and cylinder walls.

That's why you get better mileage out of "Red Crown"—and a cleaner, sweeter-running engine.

Fill at the Red Crown sign—at Standard Oil Service Stations, at garages and at other dealers.

STANDARD OIL COMPANY
(California)



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Last season. Big returns first season.
Plant Now. Circular FREE.

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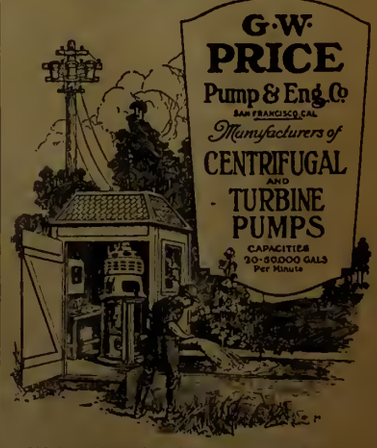
Send for our Price List of Lumber. We save you middleman's profit. Sash, Doors and Builders' Supplies.

Contractors' and Builders' Supply Co.
1401 5th St. Oakland, Cal.

You Haven't Read the Paper Until You've Read the Ads



Write for circular and name and address of our nearest agent.
33 Stevenson St.,
San Francisco, Cal.

American Fruit Growers, Inc., Have Set Up

ELECTRIC FRUIT MARKING MACHINES

In All Their Citrus Packing Houses

Two years' experience has proved that quality fruit, properly identified, commands a premium.

The ultimate consumer "wants to be shown." The fixed policy of only identifying fruit of *"quality"* is producing results.

Identified melons, bearing the *"Blue Goose"* insignia, commanded a premium at once.

Identified fruit is now established.

It will be well for growers of "Quality" fruit to get in touch with *American Fruit Growers, Inc.*, and secure the advantages of their splendid national distributing facilities, plus the means of permanently identifying their product.

The identification mark follows the fruit to the table.

The Electric Fruit Marking Company has increased its factory to take care of the increased business.

Last season some thirty cars of high grade apples from the Northwest were identified by the electric marking process. This test established beyond all doubt that no injury results from the mechanical marking of apples.

Preparations now are under way to install a number of marking machines in the Northwest, and *"Blue Goose"* apples soon will be as familiar to the consuming public as *"Blue Goose"* oranges and grapefruit.

GROW WHAT THE MARKET DEMANDS

—The Advice of F. B. Chase.

Produce the crops that are in demand, regardless of what you like to raise or what the neighbors are growing.

If you would know how F. B. Chase, with a gross income of $24,000 in 1920, the year of peak prices, increased his net sales to $30,000 or 25 per cent in 1921, when farmers all over the country were complaining of low prices and no market, read Barnhill's fascinating account of how Chase accomplished this, on page 10 of this issue.

—you will be glad you did.

Fred Builds a New Fence

And His Neighbor, Amos Brown, Gets Some Pointers, as Well as an Invitation to Chicken Dinner

AMOS BROWN, energetic proprietor of Shadow Hills Farm, brought his runabout to an abrupt stop in the usual cloud of dust which always seemed to accompany his dynamic movements.

"I say, Fred," he called to a young man near the road, who was carrying a large sledge over his shoulder. "We don't allow any knocking around here, you know. What's the idea of the tack hammer?"

"Hello, Ame," smiled the other, dropping the sledge and planting his foot upon the running board. "I'm building fence on the lower forty. That accounts for the big bruiser."

"What's the matter? Can't you hit the staples with an ordinary hammer? Or are you using ironwood posts?"

"No! Steel," answered the younger man. "And this is my post-hole digger. Or, rather, it's what we drive 'em with. Don't have to dig any holes. Come on! Have a look!"

Brown moved the car to the side of the road and sprang out. His companion shouldered the big hammer again.

"I'm building some REAL fence this time, neighbor. I think it will be here when my son inherits the farm—and just as good as the day it was planted."

They had crossed the intervening wood lot and paused at the end of a long line of slender metal shafts. A team, hitched to a wagon loaded with the posts, was tied to a near-by tree.

"What! Are you building fence alone?" inquired Brown, in surprise.

"Sure! And I'm setting 300 posts a day. I just stand at the rear of the wagon box and, with a few mighty blows with the 'tack hammer,' as you call it, I salt 'em away for life. The anchor or flange that you see near the lower end of each post holds it in place, and the more the soil settles around it, the tighter it gets. Nothing to it!"

"But how about the expense, Fred? Isn't this costing you a pretty penny?"

"Well, let's do a little figuring," was the answer. "These cost me nearly 25 cents apiece more than common redwood posts. But, at the present prices for labor, it costs nearly that much to dig the hole and set a wooden post. They're putting in several miles of this new fence on the Big Hole cattle ranch and their manager told me he had contracted to have the steel posts set for 5 cents each, whereas the same man would have charged 22 cents each to set wood posts. So, considering their long life, strength and fireproof——"

"Wait a minute! Say, that is a big factor—the fireproof quality, I mean. Why, I had 300 rods of new wood posts almost destroyed by that big brush fire last year."

"Sure, that's one thing I considered. And I can burn the weeds along this fence and never phase it. That's another good feature. Furthermore, if I continue the line up the mountain, I can snake 20 or 30 posts at a time right up through the brush with a mule. That's still another advantage. They're light and easy to handle."

"But how about rusting, Fred? And the salt fog—won't that corrode 'em?"

"Aluminum metallic finish fixes that, and with heavy galvanized wire, I believe I'll have a life-time, stock-proof pasture, strong enough and springy enough to hold even the old bull."

"Fred, you're not as crazy as I thought you were. I believe that sledge hammer beats the old post-hole digger. Say, won't you need an assistant when you are ready to string the wire? I'd like to see how it's done." He was already plunging through the brush.

"Sure, Ame! Come around tomorrow and we'll be through in time for dinner," Fred called after him. "I believe I heard Mary predict fried chicken, too. Count you in?"

"You do ask some darn foolish questions," came indistinctly from the road, followed immediately by a whir, a whine of gears—and the usual cloud of dust.

Ventura County Fair

IF present indications count for aught, the Ventura County Fair, October 5, 6, 7 and 8, of this year, will be the most pretentious exposition staged in Southern California by a county association, in many years. With more than a million dollars' worth of agricultural, industrial and livestock exhibits already scheduled for showing, the committees in charge of the fair anticipate an unusual attendance at Seaside Park, the site of the exposition, and preparattons for record-breaking crowds are being made accordingly.

Inasmuch as Santa Barbara will not hold a fair this year, the program of the Ventura County Fair will be enhanced by many big new features such as a horse show. Several strings of blooded horses, owned by Santa Barbara sportsmen, already have been entered for the event and members of the Southern California Horse Show Association are vieing with each other to display their best mounts, including polo ponies and fancy gaited animals.

Another entertainment feature of this year's fair will be a mammoth rodeo, with "Bob" Anderson, well known horseman and promoter of the rodeos at last year's State fair and at the Sacramento '49er celebration, in charge.

Other notable features will be daily band concerts, harness and running races, cat and dog shows, a huge display of citrus and other food products and commercial, industrial and agricultural exhibits, to say nothing of a solid mile of concessions and amusement events. Gregory's Royal Marine Band will give daily open air concerts and other musical organizations will participate.

Orchard Heating

IN A recent number of ORCHARD and FARM, appeared an article by Edward Insley, describing the interesting new orchard heating systems developed by various inventors.

Most of the work along this line has been inspired by the "smoke nuisance." Any housewife who has had to contend with the oily smudge smoke, would welcome any successful innovation to relieve her of this annoyance.

Growers, however, while interested in the new inventions, are more concerned at present, with protection for next winter, and are placing orders for thousands of metal heaters.

Timely, therefore, is the announcement that E. W. Dunn, well-known inventor of the "Dunn" heater, has perfected improvements on his device which make it practically smokeless. There is some light smoke, but the designer claims to have eliminated the heavy oil entirely, while at the same time increasing its efficiency.

Contracts have been let with a large Eastern manufacturer to make the Dunn heaters in quantity, under license to employ the various United States patents granted the California inventor.

The New BULLETINS

AMONG the new free Government bulletins and those especially interesting during the month of July, the following deserve special mention. Address Division of Publication, U. S. D. A., Washington, D. C. Order by number:

	FARMERS' BULLETIN
Natal Grass: A Southern Perennial Hay Crop	726
Irrigation in Northern Colorado	1028
Range and Cattle Management During Drought	1031
Rust Resistance in Winter Wheat Varieties	1048
Sitka Spruce, Its Uses, Growth and management	1060
Sweet Potato Storage Studies	1063
The Test Weight of Grain	1065
Relation of Production to Income from Dairy Cows	1069
The Handling, Shipping and Cold Storage of Bartlett Pears in the Pacific Coast States	1072
Changes in Composition of California Avocados During Growth	1073
Green Manuring	1250
Imported Cultivated Grasses	1254
Fusarium Tuber Rot of Potatoes (Circular)	214
Phoma Rot of Tomatoes (Circular)	219
Late Blight Tuber Rot of the Potato (Circular)	220
Nicotine Dust for Control of Striped Cucumber Beetle (Circular)	224
Farm Manufacture of Unfermented Apple Juice	1264
Formulas for Waterproofing Canvas	1157
The Common Cabbage Worm	766
Pit Silos	825
The Bollworm or Corn Earworm	872
Evaporation and Drying of Fruits	903
Control of Melon Aphis	914
The Control of Onion Thrips	1007
Judging Beef Cattle	1068
How Insects Affect the Rice Crop	1086
Culling for Eggs and Market	1112
Control of Apple Powdery Mildew	1120
The Green Bug or Spring Grain Aphis	1217
The Potato Leafhopper and Its Control	1225
The Peach Borer	1248
Poisonous Metals on Sprayed Fruits and Vegetables	1027

The University of California also has issued a number of new and helpful publications, sent free upon request. Address Director, Agricultural Experiment Station, Berkeley.

	CIRCULAR
Suggestions for Controlling Tuber Moth in Potatoes—Special Publication No. 24	
Common Hawks and Owls of California, From the Standpoint of the Rancher	236
Directions for Tanning and Dressing of Furs	237
The Apricot in California	238
Harvesting and Handling Apricots and Plums for Eastern Shipment	239
Harvesting and Handling California Pears for Eastern Shipment	240
Harvesting and Handling California Peaches for Eastern Shipment	241
Poultry Feeding	242
Marmalade Juice and Jelly Juice From Citrus Fruits	243
Central Wire Bracing for Fruit Trees	244
Vine Pruning Systems	245
Desirable Qualities of California Barley for Export	246
Replacing Missing Vines	249
Relative Cost of Making Logs From Small and Large Timber	339
Hog Feeding Experiments	342
Control of Pocket Gopher in California	340

The Agricultural Experiment Station, Kansas Agricultural College, Manhattan, Kansas, has issued a Circular (93), Culling Farm Poultry.

BOOK REVIEW

"World Metric Standardization," published by World Metric Standardization Council, 681 Market street, San Francisco. Price, $5. Compiled by Aubrey Drury in collaboration with a staff of experts.

This volume, of more than 500 pages, is sponsored by such men as Andrew Carnegie, Luther Burbank, Gen. Hunter Ligget and scores of other national and civic leaders. It is a complete survey of the "meter-liter-gram" system of weights and measures, used by more than 200 countries, and strongly advocated for adoption by America in place of our present clumsy and unsatisfactory system. It is a complete reference work on this important subject.

Fresno District Fair

CONTINUING the policy of making the agricultural interest always paramount, the 16th Annual Fresno District Fair to be held September 25th to 30th, 1922, will record a wide number of improvements in this direction.

Three years ago the Fresno District Fair was taken over by the Fresno County Chamber of Commerce. Since that time the Fair has grown, not alone in attendance, but also in diversity of exhibits, value of premiums and wholesomeness of entertainment.

It is the aim of the Fresno County Chamber of Commerce to have a Fair that will be fairly representative of the agricultural, horticultural, viticultural and stock raising interests of the San Joaquin Valley. Each year there has been increased premiums, each year has found new equipment.

In order to afford a better opportunity for the display of farm implements and pumping machinery, a new building 180x300 feet is being erected this year. Plans also are under way to increase the capacity of the stock barns. With these two additions it is believed that there will be ample accommodations in every department. The premiums for this year's event will surpass that of any previous year.

The half-mile dirt track has been resurfaced and greatly improved. It is also planned to erect a large bandstand from which free concerts will be given.

Important Dates

Yuba County Fair, Arboga, August 18-20.

Sonoma County Fair, Santa Rosa, August 23-27.

San Joaquin Valley Fair, Stockton, August 24-30.

California's Pageant of Progress and Industrial Exposition, Los Angeles, August 26-September 9.

Southwest Washington Fair, Chehalis-Centralia, August 28-September 2.

Walnut Growers' Field Day, Santa Paula, September 1-2.

State Fair, Sacramento, September 2-10.

Interstate Fair, Spokane, Wash., September 4-9.

Grape Day, Escondido, September 9.

Tehama County Fair, Red Bluff, September 11-17.

Tulare County Fair, Visalia, September 12-19.

Colusa County Fair, Colusa, September 14-17.

Glenn County Fair, Orland, September 18-23.

Washington State Fair, Yakima, September 18-23.

Kings County Fair, Hanford, September 19-23.

Fresno County Fair, Fresno, September 25-30.

Oregon State Fair, Salem, September 25-30.

Shasta County Fair, Anderson, September 28-30.

Ventura County Fair, Ventura, October 4-8.

Kern County Fair, Bakersfield, October 2-7.

Butte County Fair, Oroville, October 2-7.

Fork Day, Turlock, October 4.

Los Angeles County Fair, Pomona, October 17-21.

Southern California Fair, Riverside, October 10-15.

San Francisco Livestock Show, October 18-22.

California Horse-Breeders' Association, Los Angeles, October 18-22.

International Festival of Dates, Indio, October 18-22.

Imperial Valley Fair, October 23-28.

Arizona State Fair, Phoenix, October 30-November 3.

Pacific International Livestock Show, Portland, November 5-12.

Orange and Olive Festival, Oroville, November 28-December 2.

First National Walnut Exposition, Santa Ana, December 4-9.

Cover Crops

(Continued From Page 17)

[illegible]ght me $127.50 for spinach, and [illegible]ard spring showed a heavy crop [illegible] volunteer oats that I allowed to [illegible], as it seemed to make the spinach [illegible] tender, and later we cut the [illegible]t crop of oats from it that I [illegible] ever seen!

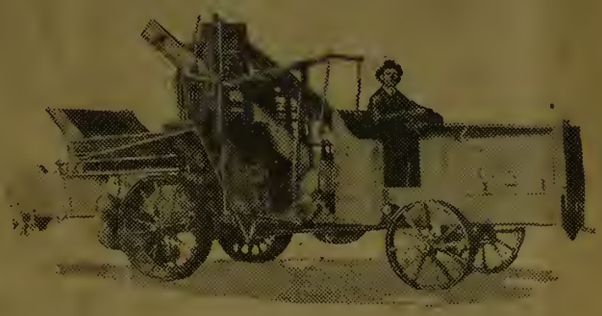
This year it is [illegible] barley, ready to [illegible], and will make an average of [illegible] This fall I shall [illegible] the [illegible] again as there is [illegible] profit from that [illegible] Torbert, Stockton, [illegible]

The New "Bennett" Hay Harvester

The latest invention of national importance in the farm implement field and one that lowers the cost of harvesting hay more than 50 per cent.

A MAN, A BOY AND A "DRIVER"

Complete Your Harvesting Crew



Implement men have predicted that ultimately some genius would invent a harvester that would travel over the field on it's own power, gather the hay from the swath or windrow and bale it, in one operation.

No Horses; No Pitchforks, No Hard Labor

Mr. Bennett has accomplished this prediction and the new "Bennett" Hay Harvester will revolutionize the hay industry. Each new invention of merit and national scope in the last 30 years has meant a tremendous fortune to it's backers.

Ask about the unparalleled opportunity we are now offering to investors.

COMMON SENSE FARM MACHINERY CO.

3RD AND MAIN STS. Phone 824-844.

519-20 ROBERTS BLDG. Los Angeles, Cal.

Herbicide kills weeds cheaply, effectively

Satisfaction Guaranteed

Destroys, *absolutely*, all pest weeds, noxious grasses, vines, shrubs, including Johnson, Bermuda, Morning Glory, Crab, Nut, Bronco, Water Grasses, Malva, Thistle, and all other noxious plants.

Herbicide is a triumph of modern science. It is a combination of chemicals, which, when sprayed on the foliage, permeates the entire sap system of the plant, and kills it root, branch seeds and all. Inasmuch as the seeds, also, are killed your next season's crop of weeds will be lighter and eventually you will banish them entirely.

Herbicide is *extremely economical* and easy to use. Does not require a professional sprayer. To save freight we ship in concentrated form—one gallon makes ten gallons of spray. This is one of the reasons why Herbicide is a more economical spray to use.

Herbicide is tried, tested, proven. It cannot fail to remove noxious weeds in the cheapest and most effective manner known. *Now is the time to kill them.* Enrich your land by removing worthless weeds which sap the soil.

Write for prices, today.

Herbicide Chemical Laboratories, 1963 Santee St., Los Angeles, Cal.

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YOUR GARDEN of FLOWERS

by Helen Temple

Climbing Roses as Vines

AS a vine or screen for a porch or pergola, or as a covering for lattice-work and walls, the climbing rose has no superior. In fact, we feel a decided preference for the climbing rose as a vine. The rose cannot be surpassed for beauty and effect when in bloom, and its hardiness needs no mention. The only defect lies in the fact that they have thorns, even though we plant the so called "thornless" varieties.

I advise the purchase of two-year-old plants if possible. They may be secured from most of our nurserymen, or through the advertisers of seeds and plants in ORCHARD and FARM. The one year plants are much less expensive, but are quite small. In using them, we must wait a year longer for real effect. The year old plants are perfectly hardy, however, growing on their own roots and being just as dependable as the two-year-olds, and my advice to buy the two-year-old plants was prompted by the fact that usually we desire quick effects.

CULTIVATING CLIMBING ROSES

The best soil for any rose is that which furnishes sufficient plant food, yet does not sour readily. If you are blessed (?) with "dobe," add a liberal amount of sand to the top soil. The rose needs drainage. Where the soil retains the water for long periods during the winter, a layer of gravel or broken crockery in the bottom of hole or trench in which the rose is planted will provide ample drainage. The adobe soil needs sand, ashes and old manure; in fact anything to make it friable. The very light soil also needs attention. Add a liberal amount of old manure, spading it into the soil very thoroughly. Do not use manure that has not become well rotted. Many fine rose bushes have been ruined by the use of manure that has not lost its heat. Climbing roses often grow a lifetime, in fact, they become a part of the house itself, and one should give thought to their future home before setting them out.

Climbing roses should be trimmed thoroughly each year. Some gardeners prune in midsummer after the blooming season; others prune while they are growing most slowly in winter. Personally, I prefer cutting back and eliminating all old flowering wood in midsummer after the blooming season. Then, in January or February, it is well to trim them up in preparation for the blooming season. I have been compelled to trim and prune climbing roses quite severely several times a year when they were used as a screen on a small porch. This frequent pruning did not affect their blossoming properties, except to cause them to bloom only on the laterals which were not cut back—usually those on the outside of the porch and along the roof where I could not reach them with the pruning shears.

THE WHITE CLIMBERS

Among the white climbers we have the White Rambler, Dorothy Perkins, Mrs. C. W. Thompson, Silver Moon, Dr. Van Fleet, Climbing Maman Cochet, White Marechal Neil, Climbing Bride, Clotilde Soupert (climbing) Trier and the Thousand Beauties, which are not entirely white but range in colors from a pure white to a dark pink. The Thousand Beauties are among the most rapid growers and are said to be thornless. The vine is not thornless, however, although it has very few thorns. The white rose is effective against any back ground. A white house with green trimmings is an almost perfect background.

There is also a pink American Beauty Climber. Then we have a pink Dorothy Perkins. We have also the Christine Wright, the climbing pink Maman Cochet, Lady Gay, American Pillar and Dr. W. Van Fleet, the pink Cherokee and Cecil Brunners. All of these are recommended.

There are several excellent climbers which are combinations of colors, perhaps a carmine with a white "eye," or an apricot pink; and again we have a blending of yellow and pink. Another type of the climbing variety is the Blue Rose. Its red blossoms later turn steel blue. It is quite hardy and blooms in a manner similar to the Rambler.

Only three important items must be considered in selecting climbing roses; first, the choice of colors for effect; second, proper preparation of the soil; and third, pruning, which must be done discriminately. Never cut the first three or four canes that grow, but cut their laterals almost entirely off.

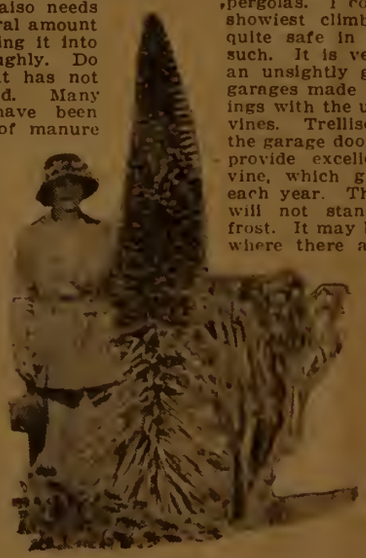
Facts About Bignonias

THE Bignonia has become one of our most popular vines in Southern California. It is a robust grower, climbing rapidly over trellis-work and pergolas. I consider it one of our showiest climbers; in fact, I feel quite safe in recommending it as such. It is very fine for covering an unsightly garage. I have seen garages made into attractive buildings with the use of a few Bignonia vines. Trellises at either side of the garage doors and across the top, provide excellent support for the vine, which grows more beautiful each year. The Bignonia however, will not stand many degrees of frost. It may be planted in sections where there are slight frosts, especially if there is protection in the way of buildings and trees about it. It will grow in any good soil.

The situation selected should have sunshine at least half the day. The vines may be started from seed in the spring or fall treated as other seedlings. However, I advise the purchase of plants. The results can be almost guaranteed, and they make such a quick "showing." Plants may be purchased from our California seed and plant companies at prices ranging from 50 cents to $1.50.

Varieties of the Bignonia include the Madam Galen which is hardier than some of the other varieties, the flowers being very large of bright scarlet coloring, and the Chereri, which, in midwinter, is covered with beautiful dark red blossoms. The Madam Galen loses its leaves for a short period in winter.

Then we have the Violaccea, which has very dark green foliage and purple flowers in clusters, and the Venusta, a mid-winter bloomer with long trumpet-shaped blossoms of bright orange. The Tweediana is the daintiest bignonia. It clings to rock work in a manner similar to ivy, and blooms in great quantities in spring, its blossoms being



An Interesting Plant

This "Echium" plant, brought from Mexico has thrived in a Ventura garden. When in bloom, it resembles a pyramid of pink blossoms, striking because of the great height of the stem.

a bright, lemon yellow. This variety often is used as a wall covering in a very warm situation. The Bignonia Speciosa is from Mexico, being a heavy bloomer of beautiful mauve colorded trumpets.

Bougainvillea Vines

THE Bougainvillea is another semi-tropical vine of great popularity. In the interior sections it is grown in greenhouses and in protected situations. In the warmer, mild sections of the State, quite often it completely covers a small building in a short time.

Helen Temple

It is an odd plant, and quite effective as the bracts are bright rosy purple. Personally, I do not care for the Bougainvillea, but I feel that each of us should have one if our gardens are large enough to add this vine without ruining the effect. A small garden, however, is best without one, except as a greenhouse specimen, for the coloring plays havoc with other flower effects.

Varietics of Bougainvillea include the Brazilliensis, a green foliaged vine with carmine flowers of continual bloom. The Spectablis the largest flowered variety, a bright purple, will not stand any frost. The Glabra Sanderiana, is the heaviest producer of medium sized flowers. The Cypheri has bright green foliage. This is one of the sturdiest growers. Plant in leaf-mold and sand indoors and use a well drained, moderately rich soil for outdoor culture.

The Wax Vine

THE wax vine thrives in a shady location, being a heavy producer of waxy, pink blossoms. This is an excellent vine for the greenhouse interior, or for a protected part of the garden. Plant in leaf mold and sand and keep fairly moist. Will not stand frost, but is well worth while cultivating for decorative purposes, both indoors and outdoors. Do not plant outdoors in the interior or northern coast regions.

The Use of Ampelopsis Vines

TWO years ago we were driving through a most prosperous country community. Suddenly a large home of perfect masonry "shouted" at us from the newly acquired ranch of one of our wealthiest citizens. When I use the term "shouted," I feel that I have expressed myself in just the right way. The building was so gleaming and stern that one could scarcely call it a home. I am sure if I were living in a house of that type, I should feel as though I were in an institution. Several observers pronounced the building "perfect." It was in fact, it was too perfect.

Recently we passed the same home. [illegible] recognized the place. The [illegible] the building were [illegible] The building [illegible] every sense of the word. It made one a bit envious. Ampelopsis (veitchii) had been used for "trimmings." The two years' growth of the vine was wonderful even for our beloved California. The owner declared he, too, had felt his house "shouting" its perfection at him every time he entered his driveway. Straightway he purchased a number of three-year-old Ampelopsis plants to "break the monotony."

About the base of the house, a variety of low growing shrubs planted in irregular groups did much to aid the vines in their efforts at "home-izing" the exterior.

HOW TO RAISE AMPELOPSIS

The Veitchii (Boston Ivy) clings to surfaces that are very smooth, the foliage overlapping almost like shingles. During the summer the vine is a delightfully cool green and in autumn, it turns to warm shades of yellow, red and brown. In the mild sections of the State, where the seasons do not vary too greatly, seed may be sown at any time. In other sections of the State and in Nevada, plant in early spring.

Seed may be sown in the permanent bed. If your soil is sticky adobe, spade under a liberal amount of sand and oil manure. Keep the soil moist and provide protection for the little plants in sections where the wind is very severe. One may also purchase young plants from the seed and plant advertisers in ORCHARD and FARM. These usually are obtainable in one, two and three-year sizes, the prices ranging from twenty-five cents to one dollar.

Two other well known Ampelopsis varietics are the Englemanii (Engleman's Ivy) and the Quinquefolia or Virginia Creeper. Both are very hardy and grow rapidly. The Quinquefolia is larger of foliage and leaf than the other varieties of the Ampelopsis. It is often used to cover tree trunks, rocky walls and rough stone work. The Englemanii is similar to the other Ampelopsis in habits and colorings, but grows more densely and is smaller of foliage.

As a permanent vine, and one that clings without support, the Ampelopsis can not be recommended too highly. It furnishes everything desired in the way of effective decoration.

HONEYSUCKLE CLIMBERS

A honeysuckle vine and a yellow climbing rose climbed over the porch of my childhood home on a large ranch in our beautiful Southern California. I often feel that I will never be quite satisfied until I have a real ranch porch with a honeysuckle vine and yellow roses climbing over it. Birds of all descriptions made homes in those vines. Tiny humming birds, canaries, linnets, blackbirds; in fact, almost every bird that inhabited our valley, boldly built nests and brought up their families on our porch. Even a timid oriole built her nest on the tip of a wandering rose cane. The honeysuckle became so dense that summer heat never entered the house on the side where it grew over the porch. It literally mothered us during the summer, for we spent almost all of our play hours under it. The honeysuckle vine, intermingled with a yellow rose climber, quite naturally stands first in my estimation of real "homey" vines of usefulness and beauty.

There are several well known varieties of honeysuckle, however. We have the Halleana (Hall's Japanese Honeysuckle) which is very sturdy, growing very rapidly. The blossoms are white when first opened, turning to yellow later. This is one of the most widely known honeysuckles in the interior.

The Aurea Reticulata (Golden Leaved Honeysuckle) is daintier of leaf than the Japanese. The leaves are veined with green and yellow, tinged with pink; the blossoms are yellow and white.

The Belgica is the variety with long sprays of red and yellow flowers, while the Sempervirens or Scarlet is that which has bright scarlet, trumpet shaped flowers. The latter is similar to our wild Scarlet honeysuckle, found throughout the warmer sections of California.

Honeysuckles will grow in any moderate soil, doing best in a sunny situation. They grow and thrive in a shady spot, but will not bloom freely. Sun is essential for the production of a large number of blossoms. Plant any time after the first of May, in the interior. In the semi-tropic and coastal regions, plant as early as March.

Irrigate thoroughly once a day until the plants begin to climb; then keep the soil in a moist condition and don't forget the cultivation. New plants may be started from seed, cuttings or layers, the most popular method being that of layering (as described in July ORCHARD and FARM). Quite often the honeysuckle, because of its rooting habit, will furnish several new plants before one is aware of it. They take root readily during the warm weather if there is an abundance of moisture in the soil where they lie. The runners, therefore must be tied up.

What To Do In August

AUGUST usually finds our gardens crying for water more than any other month of the year, and quite likely home-coming vacationists will find their services with the hose and sprinkler more necessary than a planting guide.

Lawns often are planted this month with much success. If you find your yard looking rather "down at the heel," level it, and plant a lawn. I advise a mixture of Dutch Clover and Blue Grass. This mixture seems to resist the Bermuda grass a little better than the straight Blue Grass. A pound of seed will sow about two hundred and fifty square feet. After sowing, keep the ground constantly wet until the grass makes a good showing, then keep it moist.

August is an excellent month to start fall shrubs for backgrounds and screens. Little shrub plants will grow almost as much from August until spring as they would have grown had they been planted in April or May.

I have heard some gardeners say that August was a second April. Perhaps it is, when one considers the number of plants to sow and transplant this month. However, I shall leave the climatic similarity for discussion among our readers who dwell in the interior valleys. All seedlings that are an inch or more high should be set out in August, with the exception of the tender and half-hardy plants. These should be transplanted, but should be supplied with ample protection against old Sol's hottest rays.

Seeds that may be sown this month in the milder sections are the verbena, columbine, petunia, calendula, primula, canterbury bells, pinks, lobelia, cosmos and pansy. Sow in flats, unless your situation is ideal for seedlings.

It is too late for early bulbs and too early for fall bulbs, but those bulbs which are blooming should be fed and watered well. A mulch of well-rotted manure, with thorough watering, will provide the necessities with a minimum of labor.

Advertisement

EASY NOW TO RID YOUR PLACE OF FLIES

Widely Known Scientist Discovers Wonderful Chemical That Is Fatal to Flies. Not a Poison—Harmless to Stock.

Flies are one of the most dangerous and annoying things with which the farmer has to contend. Now, through the discovery of E. R. Alexander, widely known scientist, you can rid your house and barns and livestock of these pests almost instantly, and with no trouble at all. This discovery is in the form of an organic chemical that is fatal to flies and similar pests, such as chiggers, mosquitoes and moths.

This new discovery, which is called Alex-

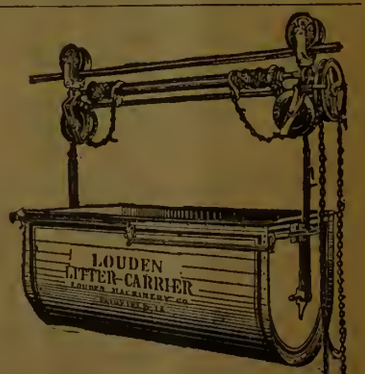
ander's Rid-O-Fly, is not a poison. Though it kills flies like magic, farm animals and human beings are not affected by it at all. In addition to killing these insects, Rid-O-Fly is a strong repellant. Flies will not come near stock or buildings where Rid-O-Fly has been used. Rid-O-Fly is particularly valuable for cows and horses, as it is a known fact that flies do untold harm to these animals.

So confident is Dr. Alexander that his discovery will rid your house, barns and livestock of these pests that he offers to send a $2.00 supply for only $1.00 on the guarantee that if Rid-O-Fly does not solve your fly problems it will cost you nothing. Two big Kansas City banks guarantee the reliability of this offer.

SEND NO MONEY—Just your name and address, and this introductory offer will be mailed at once.

Alexander Laboratories

1553 Gateway Station, Kansas City, Mo.



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W. C. Price & Co. Oroville, Cal.
San Francisco. May 6, 1922
Dear Sirs: Received your check for $177.04. Was much pleased with your sale of my wool. Will do all I can to help you in the future.
G. B. FLOWER.

In answering advertisements, please mention ORCHARD and FARM. This immediately identifies you.

ISABEL SINCLAIR'S PAGE

For the Woman in the Home

Keeping Cool—The Summer Problem

TO THE average farm housewife, the heat of summer is more disagreeable than almost any factor with which she must contend.

"Gracious, but it's hot. I wish I knew some way to keep cool." How many times have we said it or heard it?

There are a number of summer helps however, which may change her entire outlook during the warm months. A friend of mine who recently purchased a fireless cooker says she has suffered—actually suffered—needlessly for years, not realizing what a difference such a small thing would make. Now the meal is prepared for the fireless cooker in the morning and no fire need be maintained in the range during the heat of the day. She has a large size cooker which will prepare meals for the family and three men.

GAS FOR COOKING

For the woman who doesn't care for a fireless cooker or cannot obtain one, the oil stove may prove to be her salvation during the summer. Nothing is more exhausting or disagreeable than to stand over a range when the temperature is above 90. Some of the modern oil stoves burn gas in the same manner as the gas ranges used in the city.

The coal oil burner has emancipated thousands of farm women. By the use of one of these patented adjustments, any ordinary range may be converted into a gas stove.

Another modern device that promotes summer comfort is the pressure cooker, which does its work with less heat and in much shorter time, and which is particularly valuable during the canning season.

How the housewife does suffer sometimes in order to put up a supply of canned fruit, when her misery might be practically eliminated by the use of a pressure cooker, and the best thing about it is that the cooker produces a better quality of canned goods than the ordinary process!

COMFORT IN IRONING

For the home which is equipped with electricity, the electric iron is another summer comfort, but no longer is it necessary to maintain a hot fire in the range even though no electric iron is available. The gasoline iron may be used on an open porch or even out doors and not only makes the job cooler, but actually shortens it.

There are many other devices which help to lighten the housewife's work, not the least of which is the utility table or tea wagon for moving food and dishes between kitchen and dining room. The dish drainer saves so much time and the long-handled dust pan and the mop wringer prevent backaches. All of these things together, through increasing comfort and reducing effort, are almost as effective in combating the heat as a change of climate.

Sincerely,

Isabel Sinclair

Held in High Esteem—We enjoy reading ORCHARD and FARM very much, and esteem it very highly for its instructive articles on rural subjects.—C. A. Mafit, Escondido, Calif.

How I Earned a Sewing Machine

FIRST PRIZE LETTER IN PIN MONEY CONTEST
Awarded $10 Prize

A FEW years ago my need for a sewing machine reached an acute stage. All our spare cash however, was required to keep up the ranch which then was in its infancy and contributing nothing toward its own support. My only hope therefore, lay in earning the money myself.

Our orchard of little olive trees gave me the idea of turning to practical use the open spaces between the rows, and all over a rich, well drained hillside, I planted watermelons. They required little care except an occassional hoeing, for the vines shared in the irrigation the trees received.

Marketing the crop was the biggest problem, as I was ill at that time and unable to leave home, but I succeeded in hiring a neighbor girl to take a load every Saturday to a nearby town.

I had chosen for my experiment, a variety of melon that is exceptionally sweet and juicy, but one that can seldom be found on the market because its very thin rind prevents its being shipped. One trial convinced our customers that the melons were fresher and better than the imported ones, and after that we had little to do but fill orders, and it was surprising how many people planned a melon feast for Sunday.

Before the close of the season, a fine new sewing machine appeared on the scene. And aside from its financial value, our crop was one which every member of the family enjoyed to the utmost. We heartily endorse the old negro's opinion of a watermelon:

"It am mellow, it am juicy,
It am cool and it am sweet,
It am painless to the stomach,
You can eat and eat and eat."

—Mrs. H. M. Smith, Fairoaks, Calif.

Swimming Lessons—Money in the Bank

SECOND PRIZE LETTER
Awarded $5 Prize

JUST because a young lady happened to express a wish, I chanced on a way to make pin money. One afternoon, a very warm, summery one, I was having a delightful splash in our community swimming pool.

"I wish I could swim that way," said the spectator.

I hesitated only a few seconds. "I'll teach you," I said, although I had only recently acquired the art myself.

I agreed to give her six lessons for $3. She learned so quickly and did so well that I soon had another pupil, and then others. The pool was open three days a week, and I had an average of three or four pupils each afternoon, from two to five o'clock. There was plenty of time to get my housework done (I was keeping house for my parents and sisters) and besides I had lots of fun.

I had the pupils bring their own water wings, and I rigged up a canvas belt to fasten on the end of a stout pole; this supported them in the water while they were practicing the strokes. Late in the fall when the pool closed, I had a neat little sum in the bank.—Miss E. Stevenson, Van Nuys, Calif.

A Woman Makes Good With Cavies

THIRD PRIZE LETTER
Awarded $3 Prize

AN excellent way to make extra money, especially for mothers who must be at home, is to raise cavies. The small expense in getting started is a big feature. They can be housed in so small a space and are clean and nice to handle.

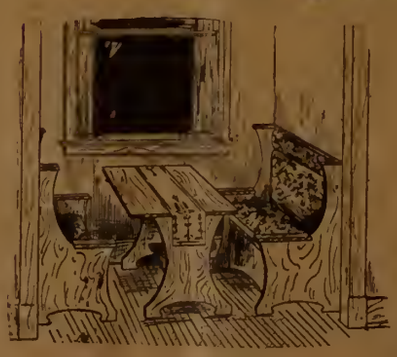
A lady friend of mine with two children started with a few and made the hutches out of ordinary boxes with wire doors; as her cavies increased she made more boxes until she had 600 of the little animals. She sells the small ones to the laboratories and has a good many for breeding stock and show purposes.

I thought such work could be done only by men, especially the building of hutches, but this woman did it, although she said she knew nothing of carpenter work.

Mothers on a farm have a two-fold opportunity for, as a rule there is plenty of green feed, which is about all the cavy requires together with a little oats or grain mixture. Growing children love these little animals for pets and can be taught to feed them, as they do not bite.

This woman makes good pin money and has plenty of time left to attend to household duties.—Mrs. F. G. Brown, Sierra Madre, Calif.

A Novel Bungalow Breakfast Nook



A VERY small house may be made neat and attractive as well as convenient by the use of built-in furniture.

The illustration shows a combination bed and "Pullman" breakfast nook, patterned after the sleeping car seat.

The cushions on the seats and backs of the settees are made with wooden frames which fit together in either position shown in the two drawings. Boxes are built under the hinged seats, where the pillows and bedding are stored during the day.

The little breakfast table has castors so that it rolls easily out of the way when it becomes necessary to make the bed.—Herbert A. Shearer.

Use More Chocolate

(Many ORCHARD and FARM subscribers will recall the series of articles on baking, prepared for this magazine by Mrs. Belle De Graf. The following information is furnished by this same authority, who more recently has been making a study of chocolate and its culinary possibilities.—I. S.)

WHY otherwise practical housewives will crowd the pantry with cake chocolate for baking and cooking—and cocoa for drinking—when ground chocolate serves every purpose, is a mystery to me! The superb quality and superior flavor is acknowledged wherever chocolate is used and when this fine product can be purchased in such a convenient form, ground ready for instant use, I can't see why women will take time to grate or melt chocolate and have different types, when ground chocolate answers every need.

While we enjoy chocolate for its fine flavor we must not forget that its high food value is of prime importance. Physicians and dietitians have long recognized the nutritive properties of chocolate. The housewife also has learned that chocolate is an important food product, combining in proper proportion the essentials of a perfect food.

Pure food and sensible diet—the keynote of healthful living—are commanding more public interest every day. A cup of chocolate, made with milk, is a food drink containing real body-buliding and sustaining elements. No matter in what form it is prepared, chocolate is as wholesome as it is palatable. And because it is so highly nourishing and easily digested, chocolate in some form should be in constant use in every family.

A cup of hot chocolate is a boon to everyone—and especially nervous, excitable persons. It makes a warming, sustaining food drink for brain workers, too! It is without rival for a tired mother, and a necessity for growing children. It is a drink that cheers and restores lost energy. The oftener you use it the better your household health will be!

And ground chocolate may be used in so many appetizing dainties. For instance, here's a delightful, easily-made dessert:

CHOCOLATE BLANC MANGE

Two cups milk, ¼ cup cornstarch; 1-3 cup sugar; 3 tablespoons ground chocolate, 1 teaspoon vanilla, 3 egg whites.

Scald the milk over hot water. Mix sugar, chocolate and cornstarch, add to hot milk. Stir constantly until thick—then cook 15 minutes, stirring occasionally. Beat egg whites until stiff and fold into the mixture, add vanilla and pour into a wet mold. Set aside to become perfectly cold and firm. Serve with a custard sauce.

Note—Compare these patterns, as to price and style, with those obtainable elsewhere!

PRETTY COSTUMES
Chosen by Isabel Sinclair

These costumes are simple and can be made readily by the home dressmaker from the instructions provided. Send 15 cents in silver or stamps for each pattern desired. Address Pattern Department, Orchard and Farm, 1111 South Broadway, Los Angeles. Give full name and address.

3801-3639—Lady's Costume

Waist 3801 cut in 7 sizes: 34, 36, 38, 40, 42, 44 and 46 inches bust measure. Skirt 3639 cut in 6 sizes: 24, 26, 28, 30, 32 and 34 inches waist measure. The width of the skirt at the foot is 2 yards. To make this dress for a medium size will require 6 yards of 40-inch material. Two separate patterns, 15 cents for each pattern.

4028—Lady's Dress

Cut in 7 sizes: 34, 36, 38, 40, 42, 44 and 46 inches buet measure. To make the dress for a medium size will require 4¾ yards of 32-inch material. The width at the foot is a little over 2 yards. Price 15 cents.

4018—Girl's Dress

Cut in 4 sizes: 6, 8, 10 and 12 years. A 10-year size requires 3¾ yards of 32-inch material. Price 15 cents.

4020—Misses' Dress

Cut in 3 sizes: 16, 18 and 20 years. An 18-year size requires 5⅞ yards of 32-inch material. Price 15 cents.

4017—Junior's Dress

Cut in 3 sizes: 12, 14 and 16 years. A 14-year size requires 4¼ yards of 32-inch material. Price 15 cents.

4022—Lady's Apron

Cut in 4 sizes: Small, medium, large and extra large. A medium size requires 2¾ yards of 40-inch material. Price 15 cents.

4032—Child's Dress

Cut in 4 sizes: 1, 2, 3, 4 and 5 years. A medium size requires 2⅜ yards of 36-inch material. Price 15 cents.

4031—Child's Romper

Cut in 4 sizes: 6 months, 1 year and 2 years. A medium size requires 2⅛ yards of 36-inch material. Price 15 cents.

3656—Lady's House Dress

Cut in 7 sizes: 34, 36, 38, 40, 42, 44 and 46 inches bust measure. A 38-inch size will require 5 yards of 36-inch material. The width of the skirt at the foot is 2 yards. Price 15 cents.

CATALOG NOTICE

Send 15 cents in silver or stamps for our up-to-date spring and summer, 1922, catalog, containing over 500 designs of ladies', misses' and children's patterns, a concise and comprehensive article on dressmaking; also "Some Points for the Needle," illustrating 30 of the various simple stitches. All valuable hints to the home dressmaker.

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Herewith find.....cents, for which send me the following patterns:

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You will find some who charge less, but you won't get the results that we give you. These prices include an individual attention, scrutiny and care to your order, whether small or large, that few if any other houses give you. AND DON'T FORGET OUR ADVISORY DEPARTMENT. We help you with your camera troubles—help you to make better pictures—WITHOUT CHARGE, whether you order work done by us or not. Consult us freely and tell us where you find difficulty in getting good pictures.

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BABY CHICKS
BABY CHICKS — Start right with the BEST—the only kind we hatch. All varieties each week. Ducklings, turkeys, hatching eggs. Incubators, brooders, supplies of all kinds. Send for price list.
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PROFITABLE POULTRY NEWS: Capacity 200,000 chicks—off every week of year. Booking fall delivery. Thousands pullets, breeders, money makers, reasonable. 180-290 egg Leghorns, Reds, Rocks, Anconas, Minorcas, Wyandottes, Ducks, Turkeys. Imported, trapnested, selected for vigor, growth, beauty, eggs. Write Profitable Poultry, Box O, 13 North Fair Oaks, Pasadena.

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WHITE LEGHORN BABY CHIX for summer and fall months from stock ACCREDITED BY SONOMA COUNTY FARM. We guarantse safe arrival. Write for prices and literature. The Pioneer Hatchery, 418 Sixth Street, Petaluma, Cal.

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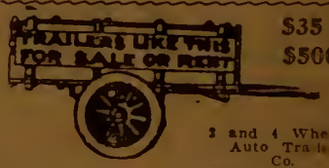

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Write for our new price list and how to get the free camera

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TURKEYS—Purebred Giant Bronze Goldbank Copper King stock. Madison Square Gardens winning strains for sixteen years. Bronze King Farm, Merced, Calif

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GUINEA PIGS for sale all colors price right Also will buy Write J. E. LOVE, 1012 Brooklyn Ave., Pasadena, Cal

GUINEA PIGS FOR SALE—Low prices Write Route 4, Box 451, Santa Rosa, Cal

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RAISE SQUABS

Big Profits—Ask for Proof!
CARNEAUX PIGEONS for sale—Real squab raisers, $5 pair. Palms Squab Ranch, Rt. 2 Box 114, Inglewood, Cal.

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ROOFING PAPER, Ists, complete, 1 ply $1.25, 2-ply, $1.60; 3-ply, $2.20.
Lead and oil paint..... $2.40
Roof paint, special 4c
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A Bigger and Better State Fair

Great 1922 Exhibition Promises to Surpass in Scope and Educational Value All Previous Shows

SACRAMENTO, during the period from September 2 to 10, will present a gala scene, with the greatest and most interesting State Fair in years attracting thousands of persons from all over the West.

According to Secretary Charles W. Paine, a most encouraging feature is the hearty co-operation of the various counties, north and south. The county exhibits are the mainstay of the "big show," and unquestionably will surpass all previous achievements.

CLOSE CO-OPERATION

How a State fair may act as the medium for the conception of closer co-operation of neighboring counties in all civic matters has been demonstrated by the experiences of Orange, Riverside and San Bernardino Counties. This is the word received by the State Agricultural Society from R. H. Mack, secretary of the San Bernardino Chamber of Commerce.

That the plan being worked out by the three districts for a tri-county exhibit at the 1922 State fair, Sepember 2 to 10, will be he stepping stone to closer relations between the counties in many matters, is the report made by Mack to his chamber.

F. A. Little, builder of displays at the National Orange Show in San Bernardino, has been appointed director of the State Fair exhibit. A miniature citrus packing plant will be one of the features, while a small oil derrick and refinery will be seen in operation. Fresh fruits, processed and under glass; citrus fruits and by-products, cotton, minerals and other products of the three counties will be exhibited.

Northern counties too, will work together. For example: The Redwood Highway, extending from San Francisco Bay northward to the Oregon line, will be picked up, figuratively, and represented in the Agricultural and Horticultural Building.

It will wind its way through a forest of redwoods, banked by enlarged photographs of its scenic beauties, while its literature will be in[illegible] of products from the [illegible]

[illegible] secretary of the San Francisco Board of Trade, [illegible] for the North [illegible]

several visits to Sacramento to arrange for the installation work, and has been allotted space with a frontage of 96 feet. Counties represented will be Sonoma, Humboldt, Marin, Napa, Mendocino, Del Norte and Lake. In addition, Mendocino will maintain its own individual exhibit booth.

CLUB WOMEN HELP

Club women of Amador County have voted to assist the Jackson Chamber of Commerce in the collection of suitable exhibits for the Amador County display, according to word received from Secretary Tallon of the chamber.

Mrs. W. E. Darrow, president of the County Federation of Women's Clubs, has appointed committees from each of the federated clubs to assist in the work.

Farm and industrial representatives also have become interested, and the schools of the county will enter displays in the Educational Building.

RELAY RACES

Two relay races, designed to provide added thrills for lovers of speed and the sensational, and with purses sufficient to attract the fastest and best trained relay stables in he West, have been added to the racing program.

The races will continue for nine days of the fair, men riders competing for five days and women riders for four days. In each instance the purse will be $1000, to be distributed $500 to the winner, $250 to second, $150 to third and $100 to fourth. The riders will rank according to their standings in the summary at the conclusion of the fair.

Two miles will be run each day, with a change of horses every half-mile; the changing posts being in front of the grandstand and at the half-mile post. The men will open on Saturday, September 2, and race Monday, Wednesday and Friday, closing on Sunday, September 10. The women will open on Sunday, September 3, and race Tuesday, Thursday and Saturday. The men must transfer saddles with each change of horses, but the women will be privileged to have their relay mounts already saddled.

"These purses will attract the West's large stables of thoroughbreds trained for relay running," asserted Secretary Paine, "and will induce many another owner of fast runners to start training his nags. The entries will close August 30."

FISH AND GAME EXHIBIT

A spring storm in the High Sierras—majestic Shasta and Lassen peaks enveloped in billows of snow clouds and flashes of forked lightning, with an accompaniment of rolling thunder; and in the foreground the greening plains and foothills of the Sacramento Valley, drinking in a fresh spring rain—this will be the dramatic feature of the State Fish and Game Commission's exhibit.

The commission's exhibit has been one of the sensations of the fair for three years, particularly last year, when an eruption of Lassen, the rippling of the waters of Lake Tahoe and the rising and setting of the moon in the mountains were reproduced. But all previous efforts will be surpassed this year, according to W. F. Dabelstein, who designed and built the other displays and to whom has been assigned the task of constructing something even more dramatic this year.

Livestock entries are most encouraging, and all signs point to the most successful stock show ever held in the State.

BIG TRACTOR SHOW

The reorganized Tractor and Implement Club of San Francisco will stage a monster tractor and implement show, indicative of the strong revival in this business, which will afford the farmer an opportunity to observe the many improvements that have taken place during recent months. The show is under the direction of W. V. Freeman, widely known San Francisco dealer. Practically all space, according to Mr. Freeman, has been allotted.

More complete, educational, and interesting than ever—the fair this year should be attended by every Californian who can be in Sacramento at that time.

Judging the Vegetable Exhibits

Los Angeles Union Stock Yards

WITH work already under way on the new project, the Union Stock Yards of Los Angeles soon will be a reality. The early opposition voiced by certain livestock men seems to have melted away. The feeling has become general that producers, as well as the promoters and the people of Los Angeles, will receive immeasurable benefit from this improvement.

A constant, "every-day" market, with competitive buying, is a necessity in the development of a greater livestock industry. This the new stock yards will provide. And unquestionably the producers will establish their own selling agencies, just as they have done at Eastern trade centers. The coming of the stock yards will mean a new link forged in the chain of good will between city and country, which are becoming ever more closely connected.

That the new Los Angeles "Yards" will change the entire aspect of the feeding business in the middle west was the contention of Professor G. I. Christie, of Purdue University (Indiana) who is visiting California in connection with a livestock survey of the Western States.

"Your project will force the readjustment of our stock feeding business," asserted this widely-known authority in an address before a recent meeting of the Southern California Purebred Livestock Association. "But," he added, "it is a logical and necessary development and will do much to strengthen the livestock business not only of California, but also of the Intermountain and Pacific West."

Professor Christie spoke in glowing terms of the public spirit and broad vision of the men who created the Chicago Union Stock Yards and who have assisted, through J. A. McNaughton, in establishing the Los Angeles enterprise.—J. C. K.

What Is the Truth About the "Little Farm?"

Announcing an Important Coming Feature

IN NO other State, perhaps, have so many persons expounded and tried the "little land" theory as in California. Many have contended that a family could live upon the produce of acre or two, but few have succeeded in proving their point.

Chas. Weeks

Especially significant, therefore, is the achievement of Charles Weeks of Palo Alto, Cal., who not only has put his own theory into practice, but also has shown many others how to succeed. For more than 17 years Weeks has been perfecting his system of intensive poultry raising, combined with gardening and fruit growing. His "Runymede" colony at Palo Alto is recognized as one of the most successful enterprises of its kind ever developed, and comprises more than 200 families.

We have asked Mr. Weeks to explain his methods to our subscribers, and in the September number will appear the first of a number of articles, written especially for ORCHARD and FARM by this authority.

Among other topics, Mr. Weeks will discuss: Choosing the Location for Egg Farming; Growing Green Feed for Poultry; Hatching and Brooding Chicks; Use of Poultry Manure to Produce Enormous Crops of Berries and Produce; Feeding Hens, and Scientific Incubation.

Watch for This Important, Helpful Feature!

California, the Dairy Wonderland

Imposing Statistics Emphasize California Dairy Development

MORE than 632,000 dairy cows were credited to California by the 1920 census, and these were in the hands of some 30,000 dairymen. The total farm value of milk produced in California last year was $80,000,000. Approximately 61,000,000 gallons of fresh milk and 4,000,000 gallons of cream represents the consumption of our people. We manufactured more than 72,000,000 pounds of butter, 13,000,000 pounds of cheese and some 67,000,000 pounds of condensed and evaporated milk. We consumed seven and one-half million gallons of ice cream. In addition, there was a considerable output of miscellaneous dairy products. Who says the Golden State is "just for fruit"?

By Sam H. Greene
SECRETARY-MANAGER, CALIFORNIA DAIRY COUNCIL

THERE is nothing of the romantic, dramatic, or spectacular in dairying. It is a prosaic calling, but fundamentally important to the development and permanent prosperity of the State. No form of agriculture can maintain a high state of development unless dairying is made one of its components.

Dairying is a cash business. The fruit grower cannot begin to realize an income from his trees under six years, the vineyardist must wait three or four, and the grain grower has no way of knowing at the time of planting what the yield will be nor the price the grain will bring. The dairyman knows every day what his product is selling for, and he receives the money at least once every month, oftentimes bi-monthly, and even weekly. Every time the old cow is milked she brings new wealth into existence. The fat in her milk not only nourishes our physical lives, it nourishes our economic life as well.

The people of California are liberal users of dairy products. Although our output of butter is enormous, California being the fourth State in the Union in point of quantity of production, we nevertheless eat as much as we produce. As we enjoy a rapidly growing export demand, it is necessary to supply the deficiency with butter from adjacent States—last year we provided our neighbors with a market for over 2,000,000 pounds. We consume over five times as much cheese as we produce in the State. It is evident, therefore, that there is room for a very large increase in production of this commodity.

EXPORT DEMAND INCREASING

The demand from the Orient and the Islands of the Pacific for California's condensed and evaporated milk is increasing rapidly. Exports of this product from the port of San Francisco during the first four months of this year exceeded by 100 per cent the exports for the same period of 1921. It is plain, therefore, that there is no danger of over-production of any of the staple dairy products, but on the contrary, there is every opportunity for an increase.

Moreover, California possesses certain distinct advantages as a dairying State which are not to be found elsewhere. No State in the Union offers so widely varied dairying conditions with which to satisfy the fancy of the dairyman. Land suitable for dairy farms and offering a prospect of higher returns than if put to other uses is available in every agricultural county in the State.

NORTHERN COAST COUNTIES

If the newcomer prefers the natural grass country, with pasture for his cattle the greater part of the year, he can find such conditions in the cool coast sections of Del Norte, Humboldt, Mendocino, Sonoma, Marin, Monterey and San Luis Obispo Counties, which, with their mild winters and gentle rains are ideal dairying areas. In all these counties the natural grasses are perennial. Considerable alfalfa is grown, and irrigation is practiced in a small way.

Although good crops of corn can be grown in the coast counties south of San Francisco Bay, it is not a sure silage crop in the northern counties. However, oats and vetch yield heavily and, for all practical purposes, make just as good ensilage. Because this crop matures earlier than corn, it is ready for the silo just about the time the natural grass dries up, and therefore provides a continuance of succulent feed which should last until fall, when root crops or some other succulent feed would be available to cary the herd through until the rainy season.

In these northern coast counties dairying is the leading industry and the dairyman is in an environment in which he and his industry are understood by the other elements of the community. He enjoys sympathy in his aspirations and can easily obtain material help for his needs. The bankers, businessmen and civic organizations give him first consideration and full co-operation.

NORTHERN INTERIOR COUNTIES

If the intending settler desires to retain some memories of the frost and snow of eastern winters without their accompanying hardships, he will find his ideal location in Shasta and Siskiyou Counties. Here, east of the coast range of mountains, are numerous valleys, varying in size from a few thousand acres to many square miles, where irrigation is possible and, in many instances, already practiced. Mountain range is convenient and cheap. While the snow falls on the mountains, it seldom does in the valleys, and when it does, disappears in a few days. Three good crops of alfalfa are the regular thing in these valleys, and four are not uncommon. In this region sheep and beef cattle divide community interest with dairying, but the advantage is on the dairyman's side on the irrigable lands.

PICTURESQUE SIERRA COUNTIES

The description of the two last mentioned counties also covers the situation in Modoc, Lassen, Plumas, and the tier of Counties along the eastern boundary of the State, where, nestled in the summits of the Sierras, is another group of small well watered valleys. The elevation is somewhat higher than that of the valleys in the coast range, and the growing season considerably shorter. Snow falls on the floors of these valleys, but the ground does not freeze.

THE GREAT VALLEY EMPIRE

In the great Valleys of the Sacramento and the San Joaquin Rivers, from Red Bluff to Bakersfield, and sweeping from the slopes of the Sierras to the foothills of the coast range, is a vast domain in which dairying is at least abreast of other types of farming, and in some of these counties it is far in advance. It is in this great basin, with its rich deep soils, long growing season, warm summers, and extensive irrigation, that intensive farming reaches its apex. It is in these areas that the combination of sunshine, water, alfalfa, and the dairy cow has created enormous wealth.

Land values run high in a large part of this basin, and the dairyman must purchase or rent land on the basis of the value created by profitable returns from raisins and other fruit growing, and from truck gardening. This is not the territory for the beginner who is inexperienced in the selection, breeding, care and feeding of high-producing cows. Dairying is as profitable here as anywhere, but only for the man who knows how to develop and maintain a high-producing herd. However, such a man will find the banking

(Continued on Page 34)

BOYS AND GIRLS Their Work and Play

John has a scalp wound
And a bandaged toe—
John has a black eye
From a mighty blow!
But despite contusions,
John is filled with joy.
He's not a beaten soldier—
Just a normal boy!

Photo Contest

ALTHOUGH cuts were not completed in time for publication of the winning photographs this month, our boys and girls may look forward to seeing them in the September number.

The photo contest brought fine response. And so many good pictures were received that the judges had rather a difficult time in deciding upon the winners.

Three ballots were taken before it was decided to award first premium, of $2, to Lillian Murphy. But Lillian's picture of a pet fawn, playing with her sisters, was so striking and unusual, as well as so clear, that it won first place.

The second prize was given, by unanimous vote, to Irene J. Turner, of Gilroy, Cal. Irene's picture of her pony was very clear and well-posed, while the setting, or background, was exceptionally good.

Third prize goes to Louise Vircovich, Hanford, Cal. The picture Louise sent was a "regular" farm scene, showing a team of big farm horses, with two little girls who looked like "midgets" beside them.

Fourth prize was awarded Elsie M. Lolax, Freshwater (Humboldt County) Cal. Elsie's photograph was well-timed and the subject matter was very original—two girls in a home made canoe—but it was very slightly "fogged," as the photographers say.

The other prize winners are named in the list below. We wish to thank our little friends for their interest in the contest. Watch for some of the pieces next month!

NAMES AND ADDRESSES OF WINNERS

First prize, $2—Lillian Murphy, Box 42, Santa Ynez, Cal.

Second prize, $1—Irene J. Turner, Gilroy, Cal.

Third prize, 75 cents—Louise Vircovich, Hanford, Cal.

Fourth prize, 50 cents—Elsie M. Lolax, Freshwater, Cal.

Five prizes of 25 cents each, to the following:

Richard and Frances Wileman, 397 Azusa Road, San Gabriel, Cal.
Charles C. Eastman, Box 101, Seligman, Ariz.
Wm. T. Smith, 3114 Crockett Blvd. Los Angeles, Cal.
Celia I. Allen, Santa Margarita, Cal.
Lois Snowgoose, Worden, Ore.

Honorable mention was given W. Burger, Dunnigan, Cal.; Floyd Cox, Gustine, Cal.; Vincent Tramill, Oakendale, Wash., and Richard Brown, Sierra Madre, Cal.

Borrowed Sister's?

"It seems to me about every five minutes, Dorothy powders her nose"

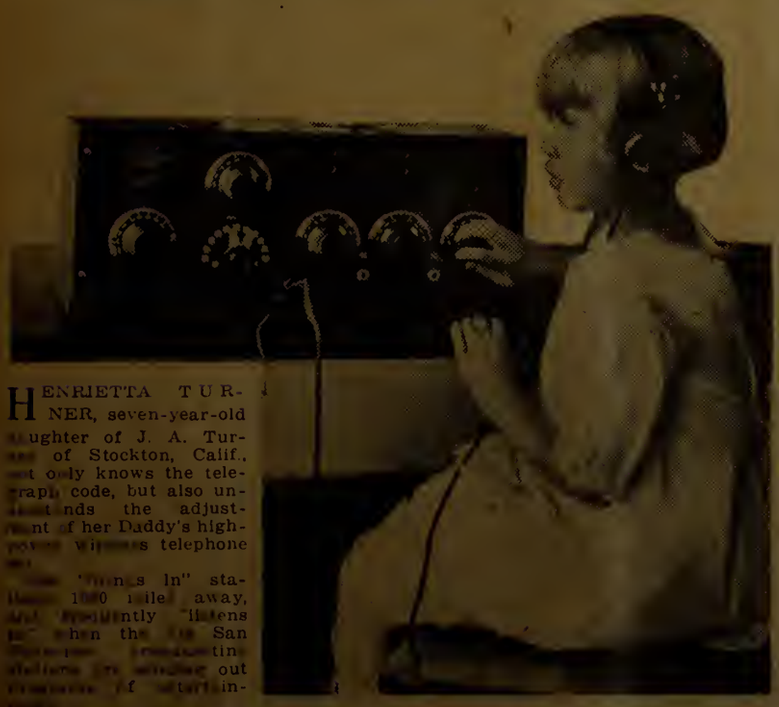
"Yes," agreed sister Sue, displaying an empty box, "but she never knows her powder."

Earns His Own

"I USED to ask my father or mother for everything I wanted," writes George Crandall, one of our readers. "Then one day I got to thinking how easy it would be to earn things for myself. I knew it wasn't always easy for them to give me money, and so I decided to get a bicycle, catcher's mitt, fishing reel and other things by my own efforts.

"That was two years ago. By working summers, and by keeping chickens and rabbits, and raising squabs I have earned these things, and a camera too, besides buying some of my clothes. I am 13 years old and large for my age. I work hard, but some of my friends seem to think I have a better time than they. This year I am raising a calf and some pigs also, and expect to make more than $100 altogether."

This Little Girl is a "Radio Fan"



HENRIETTA TURNER, seven-year-old daughter of J. A. Turner of Stockton, Calif., not only knows the telegraph code, but also understands the adjustment of her Daddy's high-power wireless telephone set.

"Hears in" stations 1000 miles away, and frequently "listens in" when the San [illegible] out [illegible] of entertainment.

[illegible] 400 acre ranch [illegible] and was one of the first California landowners and farmers to [illegible] known as the "farm-[illegible] tube," but [illegible] not con-fuse little Miss Henrietta, who operates the instruments like a professional.

The photograph is published by courtesy of the Atlantic-Pacific Radio Express Co., San Francisco.

De Laval Cream Separators have won 1091 grand and first prizes at all important expositions and fairs in the world during the past 40 years.

De Laval butter has won first prize at every meeting of the National Buttermakers Association, with but one exception.

51% ARE DE LAVALS

The overwhelming number of De Laval Cream Separators in use is proved in a striking and forceful way by three recent investigations conducted by disinterested people, covering most of the principal butter-producing states:

(1) From an investigation conducted by the Purdue Agriculturist (Indiana), Iowa Agriculturist, Cornell Countryman (New York), Agricultural Student (Ohio), Penn State Farmer, Tennessee Farmer, published by the students of the various agricultural colleges in question, and their readers, who received the questionnaire, are either graduates or former students:

64.8% use cream separators of the following makes:

50.6%—De Laval.
16.8%—Nearest competitor.*

(2) Sixty-two per cent of the cream separators on 388 representative Minnesota dairy farms, selected at random and over a wide area, are De Lavals, according to a survey recently made by The Farmer, of St. Paul.

De Laval—62%.
Nearest competitor—6.4%.*

(3) From the Dairy Farm Survey of Hoard's Dairyman (the foremost dairy paper in the world, having a circulation of approximately 85,000 at the time of this investigation).

Have you a cream separator?
80.00%—Yes.

What make?
41.18%—De Laval.
16.74%—Nearest competitor.*

51.26%—average number of De Lavals, based on the foregoing, which confirms the well-known statement that there are about as many De Lavals in use as all the rest combined.

The only reason there are so many more De Lavals in use is that it is the best separator—skims cleaner, lasts longer, and is easier to clean and turn.

*Names of all separators used and percentages given on request.

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De Laval
Cream Separator and Milker

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Wire fencing, poultry netting, barb wire, stock fencing, ready roofings, $1.00 to $3.75 per roll. Building paper, 500-ft., $1.25. Deadening felts. Paints, outside, $2.50 per gallon. Shingles, lath, standard wire nails, $4.00 per cwt. Pipe, new and second hand.

We buy in quantities and sell for less. Estimates on car lots. Specials—We deliver to cars or boat, S. F. Satisfaction guaranteed.

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BRANCH:
21st and San Pablo Ave., Oakland

Sunflowers

Not Substantial

"The situation in Russia," shouted the long haired and long winded lecturer, "is food for thought—food for travelt."

"Maybe 'tis. Maybe 'tis," testily muttered Uncle Wisacre, glancing at his watch and starting for the door, "but it won't feed the hogs and chickens."

Mother's Failure

"George, I've tried to make you a good boy, but in spite of everything I do, you are very, very naughty."

Gee, mama, you must be disappointed in yourself!"

Little Isadore Cohen had been brought up in an atmosphere "strictly business."

"How many seasons have we, Isadore?" inquired his teacher one day.

"Two, ma'm," answered Izzy. "Slack and busy."

Caught In the Act

A country schoolma'am was examining her pupils for the benefit of the members of the school board. The youngsters went through their paces nervously and did fairly well until the teacher asked the question, "Who wrote Hamlet?"

Little Johnny Jones piped up defensively, "Please, teacher, I didn't."

"Ha, ha!" Director Blank chuckled aloud, "The little skeesicks! I'll bet he did."—The Crescent.

Temporary Derangement

"H'm'm," mused the great specialist. "Does your husband display any signs of insanity?"

"Only this," replied Mrs. Sufferjet. "Sometimes he imagines he is the head of the house."

A Handicap

Teacher had been giving the class a little talk on honest methods at all times.

"Children," she said, "be diligent and steadfast, and you will succeed. Take the case of George Washington, for instance, whose birthday we always celebrate. Do you remember my telling you of the great difficulty George Washington had to contend with?"

"Yes, ma'am," said one little fellow promptly. "He couldn't tell a lie.

THE HOCKING VALLEY CIDER MILL AND FRUIT PRESSES

Produce Better Cider—And More Of It.

This new, improved mill is equipped with a special grinding device consisting of a series of steel knives set in a hardwood cylinder. This grinder cuts and grates the fruit, instead of crushing it as in ordinary mills. As a result, the very heart of the fruit is reached and a pure, clear full-flavored cider obtained. No cast iron rollers to rust and give color and taste to the product. Equally well adapted for grapes and other fruits. This mill is simple in construction, with reinforced parts, making it unusually efficient and dependable.

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(Pyorrhea if neglected results in more diseases and deaths than any other known cause)

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Treat Yourself at Home with PYRO-VOID, Dr. Hoagland's home treatment

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No Pain — No Instruments — Pyro-Void — No Trouble — A Few Minutes Each Day

WRITE TODAY—Sent Postpaid for $1.00, in plain wrapper—DON'T DELAY

PYRO-VOID SALES CO., Room 300, 908 Market St., San Francisco, Cal.

California—Dairy Paradise

(Concluded from Page 32)

and commercial fraternity ready and willing to assist him in the development of such a herd. The undeveloped lands of Kern County form an empire for the pioneer where he will be free from all the hardships that the settlers of the earlier dairying states had to undergo.

THE SOUTHERN PART OF STATE

In that part of the State south of Kern and San Luis Obispo Counties, the two principal dairying sections are Los Angeles and Imperial Counties. In the other southern counties, with the exception of some parts of Riverside County, there is as yet practically no dairying. Although considerable interest is developing, they have difficulty in producing enough fresh milk for local consumption, and import their other dairy products.

Los Angeles County ranks third in the State in volume of production, and the great city of the same name provides a constantly expanding market which is right at the producer's door. Although the county is well populated, there are yet large tracts of desirable land that have not been subdivided into small farms. These are being rapidly put upon the market.

Imperial County, with it deep alluvial soil built up by the silt carried for thousands of years in the flood waters of the Colorado, in combination with the exhaustless water supply and the longest growing period on the continent of North America, can produce more tons of feed to the acre than any other district in the United States. Alfalfa grows ten months of the year, with yields running as high as ten tons to the acre.

Here, also however, the dairyman must meet the melon grower, the lettuce and early vegetable grower in a competition of land values, but again with the banker and other town men favorably inclined to him. These facts, with the attendant profits that should follow the proper use of the abundant feed, compensate for the discomfort of the high temperature during the Summer months.

OPPORTUNITIES FOR BREEDER

Something should be said about California's position as a breeding State, and the present and future outlook for the pure-bred dairy cattle business.

The business of breeding pure-bred dairy cattle is well established and progressing in a highly satisfactory manner. There are many pure-bred herds of all the leading breeds—Holstein-Friesian, Jersey, Guernsey, Ayrshire, and Brown Swiss, given here in the order of their numbers. Our breeders rank with the best in the world, and have developed several World's Champion animals.

We are experiencing a steadily growing demand for pure-bred livestock of all kinds, and particularly for dairy animals, from the Philippines, Japan, and China, where a very general movement exists for establishing dairy herds. It is the greatest potential market in the world. How rapidly and how extensively it will develop it is impossible to predict, but California occupies the most favorable geographic position, and if this is recognized by our manufacturers and our breeders, we can build a market both for products and animals that will support a dairying industry in this and the other Pacific Slope States that can easily exceed in size and importance the entire industry of the Nation to-day.

HOUSING A DAIRY HERD

It costs less money to go into the dairying business in California than it does in the older and colder dairying States. Whereas it is necessary in such localities to build expensive barns in which the cattle must be housed continuously for six months or more and stall feeding is imperative, here the simplest kind of shed is all that is required. Merely a partially inclosed, draft-proof building is needed, for protection from winter winds and rains. The other farm buildings are both simple and inexpensive in comparison with those of the eastern States.

A cow to the acre is the percentage frequently maintained in the best alfalfa sections, while in the most highly favored, four cows can be maintained on three acres with intelligent handling. In the non-irrigated, the natural grass sections, and the localities where the crop-growing season is shorter, more land per animal is of course necessary.

California enjoys certain other definite advantages. Due to the mild climate, and the more generous supply of green feeds through the greater part of the year, cattle mature earlier, and maintain a high rate of production for a longer period. This means additional profit to the dairyman.

MANUFACTURES OF DAIRY PRODUCTS

Our manufacturing facilities are unexcelled. Nowhere in the United States can there be found such modern and complete factories as have been built here. There are over 165 butter factories; something over 129 cheese factories; 137 milk pasteurizing plants; 247 ice cream factories; and 9 condensaries. Some of these factories are small, of course, but many of them turn out enormous quantities. We have several ice cream factories with an output of 1,000,000 gallons annually, and numerous creameries that manufacture 3,000,000 to 4,000,000 pounds of butter per year, and there are a few milk condensaries with an annual output of 10,000,000 pounds.

MARKETING FACILITIES

Yet another advantage must be recorded—a superior market. San Francisco is of course the central market for all the territory West of the Rocky Mountains. It is here that the law of supply and demand operates for the fixing of values throughout this great area. At the present time there is but a very small surplus of manufactured dairy products in the Pacific Slope States, and rapidly increasing populations tend to restrict this surplus.

At the same time there is a steadily growing demand in the Orient, the Islands of the Pacific and in Mexico and South America for all kinds of dairy products. It is therefore unnecessary to send our surplus products to the Atlantic Seaboard, where they would only tend to increase the supply and consequently lower the price. The countries just mentioned provide a hungry market for such surplus as is now produced, and this market bids fair to expand far more rapidly than our production. The consequence of this advantageous set of circumstances is that producers west of the Rocky Mountains receive, and may expect to continue to receive, higher prices for their products than their brother producers east of the Rocky Mountains.

Irrigated orchards should always have

Nitrate of Soda

for Nitrogen. It collects its own moisture and will continue to furnish food while other forms lie inert in the soil, waiting for right conditions of heat and moisture to convert them into available plant food. This is one reason why NITRATE OF SODA is so successfully used for Citrus and other fruits in dry localities. Write for my FREE BULLETINS.

Dr. William S. Myers, Director

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"It's indispensable"—Please change my address as below, and send paper there till further notice. Can't get along without it.—C. C Corum, Cajon, Cal.

An Old Subscriber—"We have been taking ORCHARD and FARM for quite a while, and like it very [illegible]—Mrs S. L. Shook, Fresno, Calif.

With wonder in my eyes I watched a young man calmly drive a 1915 Ford up a long mountain grade.

In front of him was a magnificent six cylinder car that had all it could do to pull itself up the mountain. Boiling, wheezing, missing it struggled along while the little car climbed up and up, each explosion as regular as the tick of a watch.

The line of cars stopped. Someone far ahead was stalled.

The driver of the fine car got out, raised the hood, looked at the engine in perplexity, took his seat again, then raced the heated motor, like a man beating a tired animal.

I smiled as I noticed the driver of the Ford was allowing his engine to cool off and was peacefully enjoying the scenery, for I remembered that the editor told me:

KNOWING HOW has been the secret of most successful men.

He said that about George P. Weldon, but I know it is just as true about the many men who write for ORCHARD and FARM as it was about the young man who knew how to drive the Ford.

There is no substitute for knowledge — even six cylinders.

—The Subscription Man

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Chicago, Kansas City, Saint Paul, Fort Worth, Portland, Ore.

(*Mail this coupon to the house nearest you.*)

Please mail me my free copy of Montgomery Ward's Golden Jubilee Catalogue.

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Capacity Counts!

BECAUSE, through our tremendous milling capacity, we can control the source of most of the ingredients used in our feeds. For example: the bran, shorts, middlings and flour that go into SURELAY are by-products of our own mills. Then there's corn. We use 10% or more in this feed—and here are our mills in the *center* of the largest corn-growing district in the State.

Animal protein offers another example: the amount of *meat* we use daily puts us in position to secure meats of uniform, high quality throughout the year. In one case, we use the *entire* output of a single manufacturer. Again, there are vegetable proteins. Direct purchases in tremendous quantities of soya bean meal, cocoanut meal and linseed meal offer another price-advantage.

So there you are! You can't dodge this fact: large batches of feed can be manufactured cheaper than smaller ones. Capacity counts! Our costs per ton of feed are bound to be lower. No two ways about it!

Then, for extra good measure, there are the daily laboratory tests—a feature no individual poultryman could possibly afford. Before being used, each ingredient destined to go into SURELAY is analyzed in the laboratory for quality and feed value. All grains are recleaned before being ground or cracked. Never will you find mill waste, dust, smut or sweepings in Sperry Feeds. During the actual process of mixing, samples are taken regularly and tested for uniformity. It is test, test, test all the way for SURELAY—and every other Sperry Feed.

And all to what purpose? To make sure that SURELAY will live up to its reputation as the most uniform, most dependable egg mash on the market. To make sure that "what's on the tag is in the bag"—always!

Always specify SURELAY-in-the-yellow-striped-sack from your dealer; and mail the coupon for our new handbook, "Makes Hens Happy." It will show you how Sperry capacity counts in bringing feed-costs down!

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ORCHARD and FARM

SEPTEMBER, 1922

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Reduce Living Costs—Buy Army Goods!

MAIL ORDERS
—We fill and ship mail orders same day received. Return the goods if not pleased.

—We are the largest dealers in surplus army goods west of New York. We sell only high quality, serviceable goods and guarantee every article we sell to please you or will refund your money on the return of the goods. These prices are only a fraction of what the merchandise cost to produce!

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OLIVE DRAB BLANKETS $1.95

As good as new—all wool—olive drab color—66x84 in. Just as good as blankets costing $5.00.....

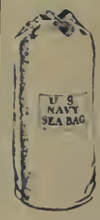
—Buy a year's supply—We never had such a blanket bargain! Surplus property, bought from the Government. Clean and sanitary, all wool, olive drab color, closely woven, 66x84 in., for double beds.
—No. OF117—Buy a year's supply while the price is only $1.95!

U. S. TENT $11.95

No. OF220—Fine waterproof tent; cost $50 to make; size 9x9 ft.; high side walls; 12.4 oz. army khaki duck. Big bargain—$11.95.

Almost as good as new

U. S. Navy Sea Bags 95c



—No. OF 119—New, made of heavy waterproof white duck; grommets in top for closing; for carrying clothing, blankets, baggage, fruit, vegetables, tools, etc.; worth $2.50 if bought in a regular way. Extra special, 95c.

NEW U. S. CANTEEN 30c

—No. OF121—Bargain! New aluminum army canteen with screw cap and chain, at a fraction of value—30c.
—No. OF122—Old style army canteens, used but in good condition, 35c; 3 for $1.00.

New U. S. Barrack Bags at 50c

—No. OF120—New army blue denim barrack or laundry bags with grommets and cord in top; size flat, 25x30 in.; for laundry, clothing, tools, fruit and vegetables, at a fraction of value—50c.

HALTERS 75c

—Buy them at a fraction of value! Used but little and for practical purposes are as good as new. The very best heavy leather, 1¼ in. wide, black or russet, sewed and riveted. Compare the price, then order all you need while we have them. No. OF-102, each 75c; dozen, $8.50.
—No. OF103—Same halter as above, brand new, black, $1.45.

1¼ in. Sewed and Riveted

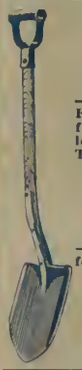
Cow Halters 75c

No. OF104. Cow Halters, same quality as above, 75c each; $8.50 dozen.

Fine Army Bridles $1.95

—No. OF105. Extra fine army bridles; best quality material, extra well made. Russet color, ⅞-in. leathers, U. S. rosettes, best port bits, leather-bound curb chains. A bargain. Used but little and in almost new condition. Each, $1.95.
—No. OF106. Same bridle as above, brand new, $2.95.
—No. OF107. U. S. Watering Bridles (reins and bit), 95c.

NEW U. S. SHOVELS 75c



—No. OF124—A fine shovel and a $1.50 value. Finest steel; brand new; surplus property bought from the U. S. Engineers Dept. Blade 8¼x11 ins., length 36 ins.; oval point; continuous steel strap. The maker says:

—"We guarantee this tool to be made of the highest quality material and to stand more rough usage than any shovel made."—Baldwin Tool Works.

—It would be good business to send your order for all you need—at 75c each.

Folding Buckets 50c

—No. OF126—New khaki color folding army buckets; hold about 5 gal. Can be carried under auto cushion. Big bargain—50c.

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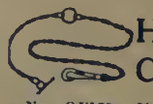

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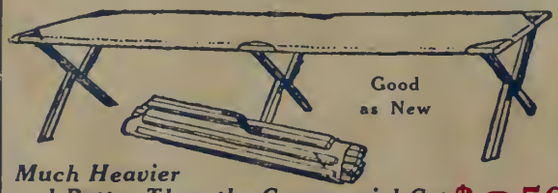

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—No. OF125—Folding Cots, extra heavy and as good as new. Folds up compactly as shown; legs steel reinforced. For the home or camp. Weight 21 lbs. At half their value—$2.50.

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EXTRA

36-in. Leather Straps 20c

—No. OF113. Brand new; very useful on the ranch or around the home.

Feed Bags 45c

—No. OF114. A bargain! Used some, but in fine condition; made of the very best canvas and leather; leather head stall. At a small fraction of its value 45c.

No. OF115. Same Feed Bag, brand new, 95c

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New Army Mattocks 75c

No. OF122

Saddles $4.50

—No. OF116. McClelland Army Saddles as good as new; designed by army officers after years of experiments; an easy rider and almost indestructible; must have cost twenty-five to thirty dollars to make. Guaranteed to please you. Extra special—$4.50.

Army & Navy Department Store
"The Store with the Reputation for Good Values"
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DEPT. OF

OUR EDITORIAL POLICY

ORCHARD and FARM is a magazine of, by and for agricultural people. We believe that to the tiller of the soil is due the best that life affords. We believe that he is the bulwark of the Nation. We honor him as the basic producer. His problems are our problems; his triumphs, our triumphs; his joys and sorrows, ours. To record his achievements and expose the duplicity of his enemies; to fight for and with him; to give him genuine help and practical information; to assist, entertain and inspire every member of his happy household—that is the policy of ORCHARD and FARM.

ORCHARD and FARM

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"THE SILENT PARTNER OF THE SUCCESSFUL FARMER"

YOUR QUESTIONS ANSWERED

ORCHARD and FARM is an institution of service. Subscribers may receive free of charge answers to questions upon any agricultural subject. Through its large staff of specialists, and its close contact with authentic sources of information, this magazine is able and willing to serve any subscriber who requires aid or information. Be sure to write name plainly and to give complete address, including street, R. F. D., or box number.

VOL. XXXIV Entered July 16, 1917, as second class matter at the Post Office of Los Angeles, California, under act of Congress of March 3rd, 1879. Subscription price, $1 a year. NO. 9

Pithy Paragraphs

Arguing with some people is about as hopeless as baking griddle cakes for a threshing crew.

Man should remember that even the finest steel is of little value when it has lost its temper.

Uncle Wiseacre says he doesn't need to set the alarm any more. He just gets up when he hears his son William come home.

About the only exercise indulged in by many of our citizens is running for office.

It's an ill wind that blows fit-fully.

Our legislators seem to spend a great deal of their time driving around the agricultural bloc.

Many farm hands are more at home with a stack of chips than a stack of hay.

Some men live in constant fear that they will not drop a tear at the proper time and place. Steeped in sorrow, grief and woe, moping on through life they go, sure they'll lose the race. Others grin and dare and do, finding zest the whole day through, vowing they will beat the game. Then if the latter grab the prize and leave the former with their sighs—who's to blame?

Gloom-dispensers continue to see nothing but disaster in the economic situation. Yet bank clearings mount higher and higher; building permits reach amazing totals; automobile sales exceed all previous records; prices for farm products, with few exceptions, are on the upgrade. While the "doubters" are making dire predictions, the "doers" are making money!

Cordially,

Editor.

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To Subscribers—An Important Announcement

IN THIS, the souvenir "California Forward" number of ORCHARD and FARM, are described a few of the manifold opportunities and delights of this wonderful State where dreams *do* come true.

Somewhere in California is *your* ideal home. And *in* California are vast industries of every character to serve you.

The advertisers who have co-operated in making this special number a success are listed in alphabetical order below. Keep this convenient directory as the means of supplying your wants. Study the many important announcements carefully. Remember, *"You haven't read the magazine until you've read the ads."*

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California—Land of Destiny

BY ARTHUR BRISBANE

STATISTICS show that California is the Nation's richest State. The only real wealth is independence, and California has more independent men and women than any other State, and has more money. California is the richest State per capita. The average Californian has more money than the average in any other State. But that is only half. California's bank resources of $2,500,000,000 are not worth one-tenth of one-thousandth as much as California's soil. And the worth of the California climate, which gives happiness, is not counted at all.

What the mere material wealth of California will be in future years no one can guess. The State will have tens of millions of inhabitants. They will live on the magnificent heights overlooking the Pacific, and fly down to work, or pleasure, to the fertile valleys. All the water that the west side of the Rockies takes from the clouds will be used, first for power, heat and light, then for irrigation.

The future gigantic empire of California, with its thousand-mile-long magic coast line, will be the wonder of future ages. All the more reason for keeping it well protected from Asia now. No wonder the Asiatics dream of it and long for it.

A KNOCKER ENCOURAGED

ORCHARD and FARM does not approve of knockers—except one. To Old Man Opportunity, who knocks at each door, ORCHARD and FARM gives every encouragement. He has many forms of disguise, but if you would know the kindly old gentleman, turn to the Farmers' Classified Market Place, page 40. You will recognize Opportunity between the lines of every "liner."

THE BRIDE'S NARROW ESCAPE

"I baked a cake for Henry—and he threw it at my head!"

"The brute!" cried her mother. "It's a wonder you aren't dead."

—Justin Nutt.

ARE YOU MOVING?

In order to insure uninterrupted service, subscribers are requested to notify us of change of address 30 days in advance.

Always give the OLD as well as the NEW address.

If possible, please attach to your letter orange mailing label from your latest copy.

ARMY and NAVY STORE

Orders for goods advertised on opposite page should be mailed to the Los Angeles store, 530-36 S. Main St. ***—Advertisement.***

Another Reason Why—

California will supply the world with fruit food

By J. E. Bergtholdt

Secretary and Manager of The Silva-Bergtholdt Company, Nurserymen, and one of California's most extensive growers of fruit.

The Second of a Series of Three Vital Messages to Fruit Growers

IN MY FIRST ANNOUNCEMENT on "The Reason Why," in which I called your attention to the inevitable decrease of fruit production in the States outside of California as being an element insuring the growth and prosperity of the California fruit growing industry, I stated that there were other equally vital factors which, *if you are alive to your opportunity,* constitute a double assurance of your fruit growing business.

Have you realized that the dietary of the 120 million people of the United States and Canada is undergoing an evolutionary change? People are consuming with each year a larger proportion per capita of fruit and vegetable products.

This change in dietary is scarcely noticeable by the individual, but is an evolutionary fact, and when involving 120 millions of people, assumes each year an enormously increasing consumption of fruit products.

This process is not alone in evidence among the people of the North American continent, but is manifesting itself to a degree, in a like evolutionary change in the dietary of the people in other civilized lands, whereas the same adverse climatic conditions prevailing in every State east of the Pacific slope are, in a like degree, operative in every other country where fruit growing is practiced in agriculture.

Facts Concerning European Production

For instance, the Prune, like the Apple, has been a staple food product of the European people, comprising a potential consuming population of over 400 millions.

Prune growing has been an important European industry for many generations, yet the entire production on the continent of Europe, according to the most authentic figures available, has never been in excess of 75,000 tons.

The production of France, Bosnia and Servia, the principal Prune growing sections of Europe, for 1921 was estimated at 50,000 tons, and advance information for this year's yield would indicate a little over 30,000 tons.

When you compare this production of a maximum 75,000 tons with an estimated production for California for this year of 110,000 tons, you will realize that in growing Prunes, Europe, though in the business for many generations, cannot keep pace with the California Prune grower. *This fact is further proved by the ever increasing exports of the California product to these European people.*

This is not alone true in quantity but also in quality of product.

What is true of the Prune is, in a larger measure, true of California grown Peach, Apricot and Pear, canned and dried.

Potential Possibilities of European Consumption

When you consider that, barring import duties, the California product can be delivered to the European consumer at the same cost for transportation (and oftentimes for less) than to the American consumer, you must realize that, in addition to supplying our California grown fruit foods to the American consumer, there is tributary to the California product a potential consuming population of approximately 400 millions of Europeans. In supplying whose fruit wants, barring import duties, the California grower has the same advantage over the European fruit grower that he has over his brother producer in the various states East, in which, as shown in my former announcement, the production of fruit is gradually, but inevitably, declining.

When the industry in California has so organized its machinery of distribution that this potential European consumption will be intelligently exploited, the export business of California fruit may be made to reach enormous proportions, not to speak of the potential possibilities of exploiting the consumption of our staple fruit products in other countries, such as the Orient, South America, Australia, New Zealand and South Africa.

Existing Facts Further Emphasized

You will now more fully realize what I meant in my former announcement when I showed that in view of the decreasing production, not alone of the states east of the Pacific Slope, but in Europe, and the gradual but ever increasing consumption of our staple fruit foods in the dietary of the world's population, that there is being created a vacuum that every acre in California planted to fruit cannot supply, provided, however, (*and this in the final analysis is the vital feature*) the California grower exercises *the forethought and good judgment to so organize the distribution of his products as to exploit the possibilities of this potential consumption to the maximum degree.*

To further illustrate, I will ask you to allow me to repeat a few facts that I have often, in connection with our nursery business, reiterated heretofore, for instance:

Prunes

In the production of the Prune the California grower has an 85% monopoly (estimating the northwestern production at 15%), not alone in supplying the wants of the people of North America, but has also an enormous advantage over his Prune grower competitor of every other known country.

Apricots

In canned and dried Apricots, the California grower has an entire monopoly of the consuming population of North America and a like enormous advantage over every other Apricot grower in other countries.

Pears

Canned and dried, the same is true as of the Apricot.

In Pears to be eaten out of hand, the California grower, in quality of fruit, season of ripening, regular production and freedom from disease, has an enormous advantage in the American market over the Pear growers of the Northwestern and Eastern States, with as yet undeveloped potential possibilities for export to the countries of Northern Europe, to whom the Pear is a fruit as staple as the Apple and Peach to the American, and to whom, in the no distant future, our Pears will be delivered by refrigerator steamers at less cost of transportation per box than the present rail and refrigeration rates to the American consumer.

Clingstone Peaches

In canned Clingstone Peaches, the California grower has a monopoly, both at home and abroad, for the reason that the California Clingstone Peach, owing to our climate—no rain during the ripening period—matures to a texture so firm that, canned, it is the only Peach grown that will not rag out in canning.

This is likewise true of the California Pear and Apricot, canned.

Peaches-dried

By reason not alone of the substance and good quality of this dried product, but by reason of our dry summers, permitting of uninterrupted sun curing, there is no peach growing section anywhere where this product can be sun dried and delivered to the consumer in a degree of quality that will compare with the California product—true likewise of California dried Apricots, Pears and Prunes.

Raisins

Raisins on this continent are grown only in California, and there are more raisins grown in California than in all the other countries of the globe. The California raisin grower has a practical monopoly of the North American consumption and is protected by tariff against European importations. In addition to that, on account of the quality of his product, he is enabled to compete successfully in the European market with the raisin producing districts of Southern Europe and Asia.

Citrus

Inasmuch as the successful commercial production of Citrus fruits is limited mainly to the lower San Joaquin Valley and the Citrus growing districts south of the Tehachapi, this branch of the industry has more nearly reached its maximum production, with Florida, however, our only competitor, and to this degree the prosperity of the California Citrus growing industry is well assured.

If space would permit, in further proof, I could enumerate in detail like advantages which the California grower has in the production of Cherries, Almonds, Walnuts, Figs, Table Grapes, Olives, etc.

Fruit Growing is California's Prime Industry

Summing up the facts presented in this and in my previous announcement, I am justified in the statement the truth of which is not realized by many, that *fruit growing* is, *more* than any other, the prime industry of California, and that in the future will add more to the development and prosperity of the State than any other activity, depending, however, upon one vital factor, concerning which I will write you in my next.

This comprises the second angle of my story. The third will appear in this publication at this time next month.

J. E. Bergtholdt

Secretary and Manager,
The Silva-Bergtholdt Company, Nurserymen,
New Castle, California

ORCHARD and FARM

VOL. XXXIV SEPTEMBER, 1922 NO. 9

CALIFORNIA'S AGRICULTURAL OPPORTUNITIES

By Hon. Wm. D. Stephens
Governor of California

WRITTEN ESPECIALLY FOR ORCHARD AND FARM

CALIFORNIA is such a wonderful State from an agricultural viewpoint that it is a source of never-ending gratification to me to tell of her opportunities and attractions to future settlers and especially those who plan to come to California to develop her agricultural resources, and to add to the wealth produced by this State.

It is, therefore, a distinct pleasure for me to comply with the request of the Editor of ORCHARD and FARM for a message to farmers and prospective settlers concerning the opportunities and delights of California, and prospects for the coming year.

Twenty years ago some waste lands of California could be had for the proverbial "song"! Today the values of crops produced run into millions of dollars annually. The same conditions largely apply to much of undeveloped California. California embraces about 100 millions of acres of land of which approximately 7,500,000 only is devoted to fruits, vegetables, grains and forage. It is estimated that about 54 millions of acres are still unappropriated range land, awaiting someone to develop them. In the past the alchemist, by combining waste water and waste land, has wrought the modern miracle that spelled success beyond the most extravagant dreams.

California has led the way in establishing standards along many lines, and as a leader among agricultural States must continue to move forward. To accomplish these things new farming and fruit-growing areas must be opened up and developed, railroads and highways must be extended, waste water that means fuel, light and power must be controlled, and the tide must turn again from the city of many illusions to the well-ordered farm, the fruitful orchard, and the open range. The State Department of Agriculture stands always ready to aid and encourage the colonist having the true vision and energy of a successful farmer.

FARMING is a big business; a good farmer or fruit grower is a business man, and he must be talked to and treated as such. Many people have been encouraged to buy lands by organizations whose only emblem is the dollar sign. Now many Western sections are entering upon a period of reconstruction and development during which a new agriculture will be built up.

The farmers and fruit growers we now have in California are in a position to build permanently and to farm successfully. They know the possibilities of the soil and of the districts in which they reside. They can give the right hand of fellowship and advice to the newcomer that will enable him to start on the right road. Those farmers who are situated on places that can be developed into permanent, successful farms under a system of diversification have every reason to look to the future with confidence.

Business men of every city should help the farmers establish the sound economic foundation upon which profitable production must rest. To develop and build up our agricultural section to what it should be, will call not only for real farmers, but real business men as well. There is just as much need for better business methods as there is for better farming methods. The truth is all one needs to tell about California to attract the settler, but it must be told in a language that the prospective settler will understand.

THE right kind of advertising will serve as a stimulus to many enterprises which have as their purpose the setting up of new agricultural districts. In most instances the plan of action carries with it a provision for publicity and for advertising that particular section. Enterprises of this sort, directed by intelligent and conscientious men, who labor from the standpoint of service rather than that of the dollar, are productive of much good to the country, as well as to the people they bring in. Colonization efforts must be built upon the experience of men who know their business and who have an honest purpose.

Without fear of contradiction, it may be said truthfully that in no State in the Union do soil, climate and range of crops and season combine to make farming and fruit-growing both pleasurable and profitable, as they do in California. Nowhere does nature guarantee so abundant a return to honest labor and intelligent exploitation of the soil as right here in California.

Affairs agricultural are now rapidly being shaped to the end that in the near future we shall be able to overcome many of the problems of the past, and success along agricultural lines can be expected in greater measure than ever before.

Governor Stephens

OUR great co-operative associations are recognized as patterns for growers and agricultural leaders of other States to follow.

Through these associations much of the uncertainty and risk has been removed from the process of marketing our tremendous crops. And they have taken the lead, also, in pointing the way to better agricultural legislation. In this respect the State government has followed a consistent and progressive policy befitting California's agricultural importance.

Favored by nature as to location, climate, soil and water resources beyond any other region in the world, California affords possibilities for intensive production above her already stupendous achievements, which stagger the imagination.

Commonsense methods, applied energy and harmonious co-operation between the farming industry and other dependent industries will insure future progressive development. California must ever go forward!

This Dirt Farmer Has Turned University Theories Topsy-Turvey

DARING to contradict many of the teachings of scientific investigators, Frank Henry of Fresno, California, who styles himself "dirt farmer and private farm adviser," has demonstrated the value of his theories to at least 41 fruit growers whose properties he is managing.

A careful student and prominent writer on agricultural topics says of Henry:

"Not all of his ideas could be proved scientifically, but most of them are founded on real scientific facts, many of which are not fully recognized by scientific men. A grapevine knows more about its own requirements for best production than do all of the professors and writers in the universe. Having been closely in touch with Henry and with numerous vineyardists who have followed his methods, I am thoroughly convinced that he knows more about the needs of grapevines for heavy bearing and economical use of soil fertility than do most of the rest of us."

CO-OPERATES WITH NATURE

The basis of Frank Henry's system is "co-operation with nature." He judges the need of irrigation by the appearance of the foliage. A dark, dull green, "non-growing" condition (that is, with no new buds or leaves) indicates a thirsty vine, he asserts, but up to that point he says the vine is better off without water.

"Let the vineyardist study his vines and examine each individual plant," suggests Henry "Only in that way can he secure the greatest possible yields."

Mr. Henry believes too many growers base their estimates of water requirements entirely upon the condition of the soil. Study the plant, not the soil, is Henry's theory.

It is in pruning, however, that this somewhat revolutionary grower has upset most completely the generally accepted theories. He has under his supervision Thompson Seedless vines carrying as much as 200 feet of wood, one to four years old. "It requires four years to build a vine up to its ultimate structure according to my system," says Henry. "At the end of this time it has gathered a large reserve strength against heavy production."

As to cultivation also, Mr. Henry has his own ideas. Unless forced by heavy growth of weeds or grass, he does no spring plowing, desiring to mature a cover crop of Burr clover, which is his standby for this purpose. When impossible for any reason to use Burr clover, he turns under the natural growth of weeds.

CONSERVES VEGETABLE MATTER

Mr. Henry does not believe, however, in turning under any cover crop when green. He discs before plowing in order to cut up the plants, and then allows them partially to cure upon the ground before plowing under. Prunings from the vines are allowed to dry and also are cut up by the disc and plowed under. He does not believe in burning any vegetable matter which can be saved for enriching the soil.

As for irrigation, Mr. Henry applies the water much later in the season before picking time than is ordinarily done. The late application, he maintains, has a tendency to hold the foliage upon the vines until frost, giving greater reserve for the dormant season and resulting in greater development of fruit buds.

In harvesting, Henry emphasizes the importance of making the berries go through a sweat, which tends to prevent mouldiing, he says. Berries are boxed only between 10 a. m. and 3 p. m. and the boxes are not stacked. This plan, he maintains, causes the raisins to absorb more heat, which gives better quality, greater weight and less evaporation.

Mr. Henry is carrying on some interesting experiments in girdling both the trunk and cane of various kinds of grapes. He believes that the Almeria, as well as the Zante, requires girdling.

In his work with orchard trees, also, the Fresno experimenter has achieved interesting results with methods somewhat out of the ordinary.

The peach, he maintains, will not stand winter pruning; therefore, he prunes "out of season," or from the middle of April to the first of May.

"I have pruned as late as June 15," says Henry, "using the long system. By this plan I reduce the spring wood growth by 50 per cent, resulting in a crop 25 per cent larger and of much better quality."

As an example of the rejuvenation of old trees through the use of the Henry method, is pointed out the J. Leblanc peach orchard, five miles northwest of Fresno. The soil is "red hardpan." A cover crop of Burr clover was used and more water applied than had been given. Finally, cultivation was discontinued entirely and irrigation accomplished by flooding over the crop of clover. For eleven years, the owner asserts, he had lost a large percentage of his crop and much of the fruit dried up in June, whereas now all the trees have remained their health and heavy crops result each year

"This orchard looks ragged," admits Henry, "but comparison of the trees and the crop with former conditions tells the story."

Needless to say, Frank Henry has created some dissension and much discussion. Because he did not have the advantage of technical training and education, certain "experts" are said to have frowned upon his activities; nevertheless, there are plenty of practical growers to acclaim the success of his undertakings.

Granting that Frank Henry has expounded some theories which apparently are based upon ignorance of scientific laws, nevertheless he has demonstrated that there is "method in his madness" and no doubt it will be found that science can explain some of his accomplishments more effectively than he himself can explain them.

But on the other hand, scientists may find that Frank Henry has discovered, through his close contact with nature, some of her laws to which they have been blinded.

Frank Henry, with 15½ pounds of grapes from one joint of a young vine—grown according to his unique system. He has produced 180 pounds from one plant, and as the result of his success, now has more than 40 vineyards and orchards under his supervision.

A Comparison in Pruning

With more than 100 feet of wood, the upper vine, pruned by the Henry method, produced 120 pounds of grapes, testing 24 per cent sugar. In contrast is shown, below, a vine cut back according to the usual system, in the same row of the same vineyard, which produced only 60 pounds, testing 22 per cent sugar. The vines are identical as to age, variety, care and soil conditions.

PRACTICAL POINTERS
IN FEW WORDS
for Busy Farmers

Moisture Capacity of Soil Increased by Organic Matter—In addition to adding plant food to the soil and improving its texture, organic matter, supplied by green-manure crops, stable manure, or in any other form, adds greatly to the moisture holding capacity. It has been shown that while 100 pounds of sand can hold only 25 pounds of water and 100 pounds of clay 50 pounds, the same weight of humus or decaying organic matter will hold 190 pounds. Clay soil containing organic matter is more friable than similar soil without organic matter. When the organic matter is entirely removed the clay remains compact during freezing and thawing. When the organic matter is returned, the soil crumbles after freezing, just as the original soil. Not only do the higher plants grow better in a soil rich in organic matter, but the activities of the soil bacteria are largely dependent on the supply of decaying vegetable matter. These bacteria need food and air. Their food is the dead vegetable matter, which they break down and make available to the higher plants. Most beneficial bacteria use air, and this they find more abundantly in a soil supplied with organic matter than in stiff clays. In sandy soils there is air enough, but the addition of humus helps to hold moisture and so benefits the bacteria as well as the higher plants.

Does Summer Fallowing Pay?—A Montana dry farmer has upset precedent in his locality by abandoning the summer fallow system. His plan, he asserts, gets results even in driest years. Ten to twelve pounds of yellow sweet clover is sown with every grain crop. A poor stand of clover usually results the first year, but the second year gives a heavy yield, whereas the grain yield is said to be improving annually. "The idea of conserving moisture when there is none to conserve seems fallacy to me," he remarked. "I 'summer fallow' with yellow clover that puts nitrogen and humus into the soil. Summer fallowing by parching and scorching the soil forces it to release plant food without compensation. Moisture can best be conserved by keeping the ground covered with a growth of vegetation."

Change in the Style of the Hog—Women's apparel is not the only commodity subject to style changes. A study of swine going to market shows a remarkable transformation. No longer is the so-called "lard" hog in demand. Constantly increasing use of vegetable fats for cooking has so reduced the demand for lard that packers now want the bacon or meat type of animal. It is fortunate, indeed, that the hog lends itself to quick changes in form, and within a few years growers have been able to produce new types of the very breeds once raised for their heavy yield of lard.

Tanning Hides on the Farm—Tanneries are equipped to make all the leather the country needs, and can make better leather more economically than the farmer can, but there are times when the producer of hides finds the margin between the price paid for the raw material and the price asked for finished leather is so great that he determines to do his own tanning. For example, in certain large sections of the country a farmer can hardly give away the hides he has, yet leather in small pieces costs him from $1 to $1.50 a pound. To help him in such emergencies the United States Department of Agriculture has just issued Department Circular 230, Home Tanning, which gives detailed directions for making leather for various purposes. With the issuance of this publication the department now has for distribution information on the tanning of hides, from the skinning of the animal to the care of the finished article, such as harness, boots and shoes. Farmers' Bulletin 1055, Country Hides and Skins: Skinning, Curing and Marketing, recently revised and reprinted for the third time, tells how to perform these operations in the most efficient manner. In Farmers' Bulletin 1183, The Care of Leather also recently revised and reprinted, are directions for making leather last longer. Any, or all, of these bulletins, including the new circular, may be obtained free by writing to the Department of Agriculture, Washington, D. C.

The Weeder, a Valuable Implement—Many farmers are making more and more use of the tool known as a weeder. After a crop has been planted and a heavy, packing rain happens to fall before it comes through the ground, the weeder may be used to run across the rows and loosen the soil. It is valuable also after cotton, grain and other plants have sprouted, for mulching and at the same time destroying thousands of small grass and weed plants. Likewise, it accomplishes some thinning. The weeder is especially valuable for running over young wheat and oats in the spring. The man who has had no experience with it may think at first that he destroyed his crop, but after a day or two he will realize what benefit he has accomplished. Many Eastern farmers use a small weeder with one horse, but throughout the South and Middle West it has become a standard tool even on larger farms.

Tuberculin Tests Increase Profits—The economic importance of tuberculosis from the standpoint of profits to cattle dealers is well illustrated in a report of Holstein sales by a prominent sales company of California during the first half of the present year. The following figures have been obtained from the records of this firm by the Pacific Dairy Review showing the wide difference in prices between tuberculin tested cattle and those which have not been subjected to the test: Tuberculin tested Holsteins: 20 bulls sold for $12,670, an average of $633; 228 females sold for $73,960, an average of $324. Holsteins sold without tuberculin test: 99 bulls sold for $7442.50, an average of $75; 245 females sold for $29,535, an average of $120. Grand total, 248 tuberculin tested Holsteins sold for $86,630, an average of $349; 344 Holsteins sold without tuberculin test for $36,977.50, an average of $107. Twenty reactor cows and heifers sold for $2985, an average of $149.

Purebred and Thoroughbred—In discussions with reference to the blood lines of certain cattle it is not unusual to hear the animals referred to as "thoroughbreds." The word thoroughbred is the name of an English breed of horses and in no wise is applicable to "blooded" or "pedigreed" animals in general. All animals of pure strains are known as "purebreds," including the Thoroughbred. It is, therefore, correct to speak of a "purebred" Thoroughbred when referring to a particular breed of horses and in such instances the name of the breed is regarded as a proper noun and is capitalized. As a further example a "pedigreed" Holstein cow, a Berkshire hog or an Airedale dog is a "purebred" but never a Thoroughbred.

New Year Book—In previous years the year book of the U. S. Department of Agriculture, like most issues of the Congressional Record and other official Government publications, has had little more consideration than a resting place on some dusty back shelf in the average library. The 1921 year book, however, which recently was issued, is of a different type than previous editions and contains a vast fund of valuable information. One section of the book is devoted to a study of "Our Beef Supply," and contains interesting illustrations and charts, as well as practical suggestions, this feature being typical of the contents of the book. Any farmer will do well to write the Office of Information, U. S. Department of Agriculture, at Washington, D. C., requesting a free copy of the 1921 year book for his library.

Water Important in Mixing Concrete—No other single factor has so great an effect upon the strength of concrete as has the amount of water used. Thousands of tests prove that a direct relation exists between the quantity of water used in mixing concrete and the strength of the resulting concrete. These tests mean money to the builder, because strength is what he is after. A variation of 10 per cent above or below the correct amount of mixing water may reduce the strength of the concrete by 30 per cent or more. The very wet, sloppy mixtures that are sometimes used in building construction result in a loss in many instances of from 50 to 60 per cent of the possible strength of the building. Within the range of plastic mixtures, the strength falls off rapidly with the addition of a small amount of superfluous water; in a one-bag batch the addition of even one pint of water more than is necessary to give a workable mix results in the same loss of strength as if from two to three pounds of cement were left out of the mixture. The exact amount of water required for any particular mixture of aggregates to obtain the greatest strength in the concrete can be determined only by actual test. Workability of the mixture is important and must not be sacrificed. As a basis for trial with well-graded aggregates up to 1½ inches in size, and a 1:2:4 mix, use 6 to 6½ gallons water per sack of cement. For a 1:2:3 mix, begin with 5¾ to 6 gallons, and for a 1:1½:3 mix, 5½ to 6 gallons. Remember: Use the least amount of water that will give a workable mixture.

Burning a Carcass—It is always a misfortune to have a valuable animal die of a contagious disease, but it is a still greater misfortune when the carcass is not disposed of properly and other susceptible animals are exposed to the infection. The cattleman who is not familiar with the method of burning a carcass may feel that burying is the easiest and most convenient and inexpensive procedure. When occasion to dispose of a dead animal again arises the California Department of Agriculture suggests the following method of burning: Pile wood around and over the carcass and cover the whole with a liberal amount of coarse stable manure or moist hay or straw. Place on the windward side underneath the manure some highly inflammable material and touch a match to it. In this way the fire will get a good start and will continue to burn or smolder for several days. There will then only remain a pile of ashes. The carcass and all the germs in it will be consumed. Try it.

To Avoid Poultry Diseases—"Prevention is better than cure." Many beginners in the poultry business, their minds set upon obtaining birds of high producing strains which meet with breed requirements, overlook a very important consideration. Eggs for hatching should be taken only from flocks which have shown no indication of contagious disease for at least a year. Avoid putting hatching eggs in any packing, such as chaff or cut straw, which may be musty or moldy. Wipe the eggs with a cloth wet in 70 to 80 per cent alcohol and hatch in a thoroughly cleaned incubator. Disease prevention must begin at the beginning!

Keeping Taint Out of Butter—Milk and its products are receptive to strong offensive odors. The flavor of butter is influenced accordingly. Pure, sweet butter depends for its desirable qualities upon many features, starting with cleanliness at the source of the milk and including careful storage and handling. Even the drinking of stagnant water by cows may affect the flavor of butter. One of the most common sources of odor or flavor is the salt used in making butter. Few persons realize the power of salt to absorb odors, but several years ago a large consignment of salt came from Europe in the same vessel with a shipment of hides. This was distributed from Boston and in a short time butter with a decided cow-hide flavor appeared on the Boston market. Salt stored in a shed near a horse stable also has been known to become impregnated with strong odors, which were imparted to butter.

Dividing a Dairy Herd—When two partners recently decided to dissolve their company and divide their herd, they called upon the official cow tester to make the division. Records of each cow were taken and the two best cows selected, the older being placed in one pen and the younger in another. Then the two next best animals were taken, in this case the young one being put in the first corral with the older cow, and the older in the second corral with the first young cow. By carrying out this plan throughout the herd, the tester felt he had made an even division.

Ben Gonnadooit Says

While on my vacation this summer, I figgered out a new plan fer increasin' efficiency this comin' winter.

They's allus a few weeks in th' winter when th' days get so short a feller can't accomplish nothin'. By the time he gets up in th' mornin', eats three meals, an' rests a little, th' day is gone anyway. So I b'lieve I'll jest not get up atall on these short days.

Like as not it'll be rainin,' anyhow, an' if I did go out an' try t' work, I would only ketch cold. By stayin' in bed, I kin get along with much less t' eat, an' save on grocery bills and prob'ly avoid havin' rheumatiz too, which means money for liniment an' doctor bills.

Also it will give me a excuse not t' see bill collectors, assessors an' other money hounds, as my wife kin tell 'em I'm sick. Furthermore, I will save consid'ble on clothes.

All that's necessary is t' persuade my wife t' feed th' stock, th' whitch no doubt she'll be glad t' do when I explain how much money we'll save, 'specially since she's accustomed t' doin' it ennyway.—BEN GONNADOOIT.

Independence Via the Milky Way

Holsteins, Hard Work and Honesty Prove a Winning Combination for Max Arp

BLUE ribbons and big records are inspiring under any circumstances, but when they are achieved by a real "dirt farmer," who has built up his herd and holdings from nothing, they are especially significant.

The subject of this sketch started his dairy business with the savings of five years' hard labor, and nothing else but his own determination. Today—but here is the interesting story, told in Barnhill's best and most entertaining style!—The Editor.

By O. H. Barnhill

CONTRIBUTING EDITOR OF ORCHARD AND FARM

Mercedes Beauty Alcartra, State champion 3-year-old, one of Max Arp's favorites, with a record of 20,432 pounds of milk and 900 pounds of butter.

THIS is the story of Max Arp, who came from Holstein at the age of 16 years with nothing but good health, good sense and a determination to wrest success from the soil.

Now, after a quarter century struggle, he is enjoying the fruits of his labor while yet in the prime of life, the proud possessor of one of the finest dairy farms in Oregon. "It's been a bully fight," declares Arp. "I've enjoyed every bit of it."

Young Arp began the battle on an Iowa farm, where he worked for $9 a month and board. The next year he received a monthly stipend of $12, which was increased to $18 the third 12 months. Then he went to Nebraska, where he labored for two years on a big ranch in Franklin County at $20 a month.

It was real work, admits Arp, who, tells how he and his employer one winter fed 1200 steers and 2500 hogs, giving them each day six loads of hay and 200 bushels of corn. The latter had to be hauled with teams from a town five miles distant. Some mornings they made the long, cold drive to town before daylight. Once the snow was so deep that a team had to be sent ahead to break the track.

FIVE YEARS' SAVINGS

After five years of "working out" young Arp had $800, which was $116 more than his total wages for that period. He was then 21 years old and decided to get into the farming game on his own account, first returning to the old country to marry a former schoolmate.

A quarter section of rich bottom land was bought for $30 an acre which until then was the highest price ever paid for farm land in that district. His former employer aided Arp in borrowing the necessary funds at 4 per cent to finance the deal.

Having secured a wife and a farm, Arp next bought six Poland China pigs and seven Shorthorn heifers. A flood came and drowned the pigs, followed by other misfortunes, but Max only tightened his belt another notch, doing all his own work the first year on the 160-acre farm. Then he bought an additional 200 acres of land, hired a "hand" and got busy producing provender.

Seeing the possibilities of alfalfa, he planted a large acreage to this valuable legume. Within a few months the ground was covered with a luxuriant growth of sunflowers, high enough to hide a man. That was before sunflower silage was discovered, and the neighbors had the laugh on young Arp — until they found that the sunflowers had been hiding a million baby alfalfa plants, which next year yielded a bountiful crop of nutritious roughage.

EVEN INDIANS SCOUTED

Even the Indians made fun of Arp, one leather-faced old chief remarking, "Dutchman heap big fool—raise alfalfa to feed grasshoppers." But the alfalfa also supported a dozen milk cows, which produced enough cream profits to pay the hired help, while the ancient red man is still digging ditches for a living.

After 10 years of Nebraska farming, Arp made his third western move, this time landing in the Willamette Valley of western Oregon. Listening to the siren song of fruit boomers, he bought a 10-acre tract near Eugene, planted an orchard and built the finest farm home in that part of the State.

Four years of orcharding however, convinced Arp that he wasn't cut out for a horticulturist. Trees seemed to him to lack intelligence and to be always in the way when he wanted to cultivate the ground.

The eldest son, Hans, was getting old enough to take an interest in farm work and as between trees and cows he expressed a decided preference for the latter. Then Arp sold his orchard home and bought a dairy farm a few miles farther out, stocking it with grade Jerseys, which far outnumber all other kinds of dairy cattle in the Willamette Valley.

One day three of the four milkers quit, leaving 40 bulging bags to be emptied twice a day. A family council was held. "The children and I will help milk those cows," volunteered Mrs. Arp, "until other help can be secured." Hans was then about 15, Millie 13 and Norma 11. All had learned how to extract the lacteal fluid, and gladly aided in bridging the crisis.

Interior View of Milking Barn, Arp Dairy

A RECORD TRANSFER

In spite of the fact that he was dairying in Jerseyland, Arp decided that a Holsteiner should raise Holsteins. Being a man of action, Arp made the change in breeds in record time. The Jerseys were milked one morning, and sold at auction in the afternoon, while a herd of Holsteins was milked in the evening.

Since most milk consumers in this region are educated to the idea that Jersey milk is superior to all other, the change cost Arp 40 customers. They learned, however, that just as much cream gathered on top of the Holstein milk as on the Jersey fluid they were getting, and all the lost customers came back into the Arp fold, bringing others with them.

"We are selling more cream now than when we kept Jerseys," states Mr. Arp. "Our customers are taking six gallons of cream a day and paying 15 cents a half pint for it, besides 300 quarts of milk at 12 cents. The demand is so great that we have trouble in keeping enough milk and cream for our own use."

"THERE'S A REASON"

Of course there's a reason. Most of the Jersey milk sold in Eugene is "standardized" by extracting enough cream to bring the butterfat content down to 4 per cent, which is practically the same as Arp's Holstein milk. Furthermore, Arp delivers his evening's milk before breakfast the next morning and the morning's milk before dinnertime, while the Jersey people do not get either milking to their customers until the afternoon and some of it is not delivered until the second morning.

In order to keep the milk this length of time without spoiling, it is pasteurized. Formerly it was clarified as well. It was found, however, that this latter treatment impaired the keeping quality of the milk, and it was discontinued. Arp's milk needs neither process, as it is cooled, bottled and quickly delivered to customers under extremely sanitary conditions.

As a result of the recommendations of physicians, Arp has 15 customers taking the "milk cure" each of whom consumes about six quarts of his product daily. One reports a gain of 35 pounds in six weeks.

Thirty cows now are being milked. These average seven gallons of milk a day, which retails for $3.36, or $100 a month. This seems like a fair return, yet operating costs are so high that it just about pays running expenses, leaving the principal profit to come from the sale of animals. Arp made provision for this

(Continued on Page 3[illegible])

Modern Buildings and Equipment, Paid for by Cows

EDITORIAL DEPARTMENT

Timely Topics among Farm Folk

James C. Knollin, Managing Editor

California to Lead Nation in Fruits

COLD figures and statistics as a rule are uninteresting. Only when interpreted by one of understanding and vision do they become alive.

Statistical data recently collected and tabulated by J. E. Bergtholdt, well-known California nurseryman and fruit grower, are not only vitally interesting, but prophetic as well.

Mr. Bergtholdt, creator of the "Bergtholdt plan" of promoting the use of California fruits throughout the Nation, shows beyond dispute the increasing leadership of California as producer of America's fruit foods.

It is significant that while fruit acreage and yield in California are *increasing* by leaps and bounds, the total yield, acreage, and production per tree are *decreasing* in practically all other fruit-growing States. This means that California's tremendous advantage, as compared with the climatic handicaps of other sections, is becoming more apparent every year!

In a recent comparison, Mr. Bergtholdt showed that in 1919, for every $1.30 the fruit growers in other States produced from trees in orchard, the California grower produced $3.13, or an income per tree in California of two and one-half times the production of the average in other States. Measured in dollars, he shows by actual statistics that the production of fruit in California for the past three years was 35 per cent of that of the entire United States!

Basing his conclusion upon these facts and the additional knowledge that the consumption of fruit is constantly on the increase among the American people, Mr. Bergtholdt predicts that in years to come every acre of land in California adapted to fruit growing will be required to supply the demand for this essential food.

Finally, Mr. Bergtholdt's "big idea" is to carry on a co-operative advertising campaign, greater than anything ever before attempted, and supplementary to the regular advertising of the great marketing associations, to the end that California food fruits will be as familiar to housewives and chefs as the breakfast foods, soaps and other commercial products which have been advertised consistently for years.

"We have a tremendous advantage scarcely appreciated even by our most optimistic boosters," asserts Mr. Bergtholdt. "Let us not overlook a single opportunity to exploit the potential consumption of our products by the American people."

Future Horticultural Assets

WHAT new and important agricultural industries will be developed in California within the next few years? The imagination may be given almost free rein in considering this fascinating question.

ORCHARD and FARM has taken the lead in publishing articles concerning trees and plants that offer great promise. Among these are the carob tree, the Zante currant, the hemp plant, the chestnut, the quince, the pomegranate and others that are being grown on a small scale or tried experimentally in various sections of the State. But this list scarcely touches upon the possible field of exploitation.

A correspondent recently took exception to ORCHARD and FARM'S willingness to give publicity to "new and untried" crops. "You are encouraging people to invest their money on the strength of theoretical results," chides the writer.

However, although we appreciate the interest which prompted this criticism, we shall continue to "tell the world" about new and better things as they come to our attention. ORCHARD and FARM tries to keep abreast of progress, and considers it a duty to give publicity to discoveries that may mean increased wealth for California.

And it would be a reflection upon the intelligence of our subscribers, were we to accompany each article of this kind with a warning not to plunge carelessly into heavy investment.

No wide-awake farmer would invest in any project without investigating carefully, and ascertaining possible demand. But it would be well if every land-owner in California would set aside a small part of his holdings for experimental purposes, co-operating with Federal and State scientists in trying out the interesting plant immigrants brought to this State.

As for commercial development—those who have the money and vision to invest (cautiously and intelligently, of course) in new agricultural enterprises, may reap the [illegible] that more timid and less progressive persons [illegible]. At any rate, they will be contributing to [illegible] work and promoting the welfare of all [illegible].

Great Possibilities for Expansion

MANY valuable, interesting and almost unexploited crops require only awakened interest on the part of the public to become important assets to California.

A few years ago, avocado boosters were described as "cranks," and investors advised to steer clear of them. Yet no one today would have the temerity to say that all the money invested in the avocado industry has been wasted!

The situation was described exactly by George C. Roeding, veteran California nurseryman and fruit grower, in a recent interview.

"I have tried for years," he asserted, "to get our people interested in some of the newer trees and plants that have such great promise But the tendency is either to overdo the thing, or to disregard it entirely. Some very valuable discoveries have been given a black eye at the start by over-exploitation, while others equally valuable have been lying dormant because those who recognized their worth could not arouse sufficient interest to try them out in a safe and sane manner."

Mr. Roeding mentioned the great possibilities in growing licorice, the roots of which thrive in certain swampy sections of California where practically no other valuable crop will grow. He also expressed the opinion that an enormous industry might be developed around the cork oak, which is known to adapt itself readily to many of our foothill sections.

Millions of dollars spent by America for licorice and cork both of which now are imported, may be brought to California through intelligent and systematic develoment, Mr. Roeding believes.

The filbert, he pointed out, may prove even more valuable to California than the chestnut. Yet neither of these trees has received wide attention in this State. Until ORCHARD and FARM recently published a series of articles on chestnut growing, there was very little general knowledge of its possibilities.

By all means let us receive cordially all suggestions concerning the introduction of new plants, or further development of those with which we have experimented!

This does not mean we must rush headlong to our financial ruin upon a wave of artificial enthusiasm. It is rather a safe bet, however, that the man who will sell stock to widows and orphans, in a plantation for the production of kickless wine-grapes or denatured onions, will find his way to the penitentiary sooner or later anyway.

And similarly, the foolish investor who decides to sink his savings in an orchard of peanut trees probably would have lost his money eventually on Falleasy oil stock!

"So there you are!"

Like Son, Like Father

THERE are a few "old-timers" among farmers, stockmen and fruit-growers who cannot be reached directly by agricultural educators, and who will not take part in progressive movements.

They are carrying on certain practices because their fathers and grandfathers found them "good enough."

There is a way, however, to "get next to" such men—an indirect method but a certain one; that is, to approach them through their children.

When Mr. I. Noitall sees his small son producing better pork for less money than he has been producing he sits up and takes notice. Usually he becomes interested in the methods that have brought about such astonishing results and begins to realize that he may have been a little backward about coming forward.

It dawns upon him that in spite of his years of experience he may have a great deal to learn. And usually, in order that his offspring shall not shame him entirely, he sets about learning it.

Nowadays, what with pig clubs, calf clubs, junior colleges and agricultural courses in the elementary schools, it is almost impossible for even the most dilatory and unbelieving elder to fail to absorb some scientific knowledge.

No more impressive example of agricultural education of the youngsters is afforded than the Riverside County Fair, of which the Junior department has become one of the most important features. One of these days the more seasoned exhibitors are going to receive a severe jolt, when the Grand Champion ribbon for the whole show goes to a junior exhibitor who has outgeneraled the experienced producers of pork, pumpkins or pedigreed Percherons.

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Timely Fruit Growing Topics

By George P. Weldon

CONTRIBUTING HORTICULTURAL EDITOR OF ORCHARD AND FARM
POMOLOGIST, CHAFFEY JUNIOR COLLEGE OF AGRICULTURE

Does It Pay to Prune Apricots Soon After Crop Is Harvested?

IT HAS long been a practice in California to prune apricot trees during the Summer, shortly after the crop has been harvested. This pruning consists in some cases of a light removal of small branches; in others it has for its object the removal of all branches that would be taken off during the dormant season pruning and is made to take the place of the latter. Growers would do well to study the situation carefully and determine if possible just what effect heavy pruning of the apricot tree may have upon the growth of the tree and the next season's production. This practice, so common with apricots, is not in vogue with peaches or other deciduous fruits. We might well ask ourselves the question: If such pruning results in good as far as apricots are concerned, why not apply it to all other deciduous fruits?

George P. Weldon

A DAMAGING PRACTICE

The writer has become convinced from observations, that heavy summer pruning of the apricot, and likewise of any other kind of tree in full foliage before the dormant period has commenced, is weakening to the tree, and is not justifiable in the face of past results.

No one should discourage the removal of succulent, light-colored, watersprout growth at any time during the season, and it is not the writer's intention to say anything that would lead one to think that summer pruning in moderation cannot be practiced safely.

It is intended, however, to discourage heavy cutting of any kind of tree at a time when the foliage is needed for plant food storage or growth.

Length growth in branches is made to a great extent, during the early summer, and at the time when apricots are pruned following the harvest growth in length may have been wholly completed.

If, after this time, the foliage had no value in the development of the tree there might be little harm in severe pruning, but such is not the case. After length growth has ceased, the tree stores up plant food in its branches which is necessary in order that growth, blooming and fruit setting, may take place normally the following spring. Without leaves there can be no plant food storage. The more foliage of a certain type that the tree possesses the greater will be the storage capacity.

It is the mature, dark-green foliage that performs the greatest service in plant food elaboration and consequently in plant food storage. Any practice which results in the removal of this type of foliage and causes in its place a development of light green foliage, is at the expense of plant food elaboration and storage, and interferes seriously with the life processes of the tree.

PROPER SUMMER PRUNING

There is a type of summer pruning which will encourage fruit production, but it must take place much earlier than the time when apricots ordinarily are pruned. I refer to the practice of "pinching off" the tips of new growth after it has attained a length of a few inches. It has been found that two or three such "pinchings off" early in the season will encourage the formation of fruit buds, and with apples, at least, this practice has been successfully followed in many cases.

This article is intended to induce some apricot growers to give the matter of summer pruning serious thought. If some one is convinced in his own mind that the practice is good, why not prune part of the orchard in the summer and the rest of it in the winter, for a few successive seasons, and determine the facts in the case?

The practice of summer pruning of the apricot is so general that only carefully planned experiments, giving positive results, will convince those growers who have been following it for many years.

In theory, the practice is wrong, and the writer, for one, has failed as yet to become convinced from observation that there is any virtue in pruning at a time when heavy loss of foliage will interfere with the storage of plant food.

Fall Budding Should Be Done in August and September

PROPAGATION of any desired variety of fruit tree is possible by budding or grafting the variety into another closely related tree, which may simply be another variety, another species or a seedling of either the same or another variety.

It does not require great skill to do successful budding or grafting as some might think, and any one who understands the principle and methods can get results with very little practice.

While necessarily we must depend upon the nurseryman to do most of our propagating work for us, there is no reason why every person who owns an orchard, or who is merely interested in plant growth, should not learn to bud.

TIME TO BUD

In the first place, it is well to bear in mind that budding can be done any time the bark will slip and dormant buds for insertion can be secured. The best time for budding is late in June, or any time during July, August or September.

Buds inserted in August and September are known as dormant buds, while buds inserted during June or July may be forced into growth soon after budding. Usually they are termed June buds. In the June budding work it is necessary to select buds that have developed during the season. They may be found at the base of the leaf stem. The same buds are used in the fall work, but, of course, since they have had more time for growth, are larger and firmer. Whether trees are June-budded or dormant-budded, the process is the same, and consists of the following steps:

STEPS IN BUDDING

(1) Select healthy, strong, new growth for bud-wood and trim off the foliage, leaving a little piece of the leaf stem with the bud, which will aid in handling it.

(2) With a sharp knife cut a vertical slit about two inches long completely through the bark of the stock to be budded. At the top of the vertical slit cut a horizontal slit about half an inch long. A little twist of the knife blade when the horizontal slit is being cut will slip the bark at the corners of the T-shaped cut, thus permitting the insertion of the bud.

(3) With the base of the bud stick held outward, cut a thin, wedge-shaped slice of bark and a little wood, beginning the cut about half an inch below the bud, and terminating about the same distance above. Thus the operator will have a firm slice of the twig with bud in center, which is inserted into the T-shaped slit with bud pointing upward.

(4) A piece of cotton twine or raffia fiber is used to tie the bud in place. Beginning about one inch below the bud, the twine or raffia is wound about the tree trunk or branch and one end is held firmly by crossing and pulling tight. About three wraps are made below the bud and about the same number above, when the free end of the tying material is passed under the last wrap and pulled tight.

(5) If the bud has been properly inserted and well tied, it will unite with the stem in a couple of weeks, the time, however, depending on the conditions of growth when budding is done. June buds will unite much more quickly than September buds. After union has taken place, the twine or raffia is cut on the opposite side of the twig from the bud so that there will be no interference with growth.

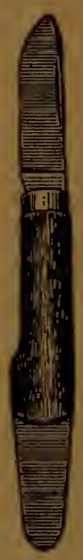
(6) The growth of June buds is forced during the season by cutting back the twig which is budded. Fall buds remain dormant all winter and are forced into growth the following spring by the removal of the twig just above the bud. A slight stub, about one inch long, should be left to prevent drying out of the bud. Grafting wax should be applied to the cut made in removing twig.

Citrus budding usually is done in the early spring and instead of tying the buds with twine or raffia, they are completely covered with waxed tape, which is left in place until union takes place in five or six weeks.

Seedling trees budded in the fall may be planted in the orchard the following spring as "dormant buds," and the growth of the tree, which ordinarily takes place in the nursery, will take place in the orchard. Very satisfactory results may be attained in the use of dormant buds instead of one-year-old nursery trees.

How to Bud Successfully

ILLUSTRATIONS, COURTESY U. S. DEPARTMENT AGRICULTURE



a

BUDDING KNIFE

This tool is made especially for budding work, and is considered almost indispensable by many fruit growers.

BUD STICK

Figure B shows an ideal bud stick, with small piece of leaf-stem protecting the bud. Only healthy, new growth should be selected.

b

CUTTING THE STOCK

Figure C indicates manner of making horizontal and vertical slits in stock to be budded. The vertical slit is about two inches in length and the horizontal slit about one-half inch. The cuts are made completely through the bark.

c

READY FOR BUD

A deft twist of the knife has turned back the edges of the upper cut and opened the way for the bud. Budding can be done at any time when the bark will slip, and when dormant buds are available. The best time is late in June, or any time during July, August or September.

d

e

CUTTING THE BUD

Care is exercised in removing the bud. A firm slice of the twig, about one inch long, with bud in center, is removed. The piece should consist of a thin, wedge-shaped slice of bark and a little wood. The base of the bud-stick is held outward in cutting.

f

INSERTING BUD

Figure F shows how bud is inserted in cut.

Figure G shows bud completely inserted and ready for tying. The operator is careful not to bruise or break the tender shoot.

g

FINAL WRAPPING

A piece of cotton twine or raffia fiber, as shown in Figure H, is used to tie the bud in place. About three wraps below and three above the bud suffice for protection.

h

Down River From Sacramento -- Impressions of an Inland Empire

ASK Mr. Average Farmer from Anywhere what he considers the richest and most productive soil in the world, and nine chances to one he'll answer, "Sediment — bottom lands."

It is no wonder, then that man's improvement on nature has resulted in the production of millions of dollars of agricultural wealth in the magic district "down river" from California's State Capital.

Nature did her part through the age-long activity of the great river. Year after year, before the big stream was harnessed and tamed it deposited tons of richest silt over a great area.

The engineers, too, did their work well, and now, spinning over the beautiful highway that borders the peaceful stream, the traveler is amazed and entranced by the wealth and beauty spread out before him.

On one side of the river he views mile after mile of pear orchards, dotted with fine homes — orchards which, we learned, are not for sale, and which for as much as forty years, have produced almost unbelievable profits.

And on the other side, stretch great fields of alfalfa, potatoes, beans, corn, sugar beets and countless other crops, interspersed here and there with young orchards.

WATER TRANSPORTATION

Lost in wonder and admiration, the visitor is persuaded with difficulty to discuss prosaic facts and figures.

But he learns that upon the river and its tributary streams and canals is transported more than $50,000,000 worth of produce each year. Water transportation is a big feature of the down-river district. Many farms have private "landings," where steamers make frequent calls, and most of the grain and hay and much of the fruit, both fresh and canned, starts its journey to market via the water route.

Statistics dealing with production are equally amazing. The per-acre yields of these rich lands are little short of marvelous, while inter-cropping and double-cropping are common practices. Two great cash crops are beans and asparagus, often interplanted. This district is said to produce more than two-thirds of the canning asparagus grown in America. Two-year-old asparagus roots often bring a return of $175 to $200 an acre.

TREMENDOUS YIELDS

Barley yields 30 to 60 sacks and wheat gives equally attractive yields. Many growers are said to have produced 20 to 25 sacks of beans per acre, between the rows of their orchard trees.

Beets have gone as high as 27 tons per acre, averaging 18 per cent sugar.

These figures suggest the extent of crop production in this district: Asparagus, 20,000 acres; potatoes, 40,000 acres; onions, 8000 acres.

Probably in no other section of California can so many different crops be grown with such uniformly high yields.

But to the uninitiated, the production of pears and other tree fruits is the real marvel. Many are accustomed to regard the pear as a "high and dry" fruit, reaching its best condition at considerable altitudes, where cold winters prevail.

Yet almost on the banks of the river, with their "feet literally in water," [illegible] of acres of pears produce [illegible] yields of the finest canning fruit. The cores are light, and the meat of the texture desired for canning. The trees are hardy and long lived, seemingly having the vitality to resist the inroads of blight.

It is a theory among those who have studied conditions in this section that almost any plant will adapt itself to a water table which is fairly constant, even though the table be high. This is borne out by the success that has attended alfalfa production.

ALFALFA THRIVES

Normally, alfalfa is a deep-rooted plant, supposedly unable to thrive with "wet feet." Yet alfalfa here yields as much as ten tons per acre, and produces consistently for many years without replanting.

Subirrigation, by control of the water table, is practiced. Irrigation and drainage, in fact, are so closely allied as to form almost one process; they are interdependent. The complete system of canals and pumps makes it possible to control the water with astounding ease and accuracy. The water table may be raised or lowered at will, and when subirrigation is not practicable or desirable, the water may be drawn from the canals by means of pumps or siphons, and carried over the surface of the ground.

THE HOLLAND PROJECT

Of the various projects developed in this section, none shows more careful planning than that of the Holland Land Company, which is developing a tract of some 20,000 acres, of which the river town of Clarksburg is the central point.

Attention has been paid not only to sound engineering principles, but also to such aesthetic considerations as roadside tree planting, community development and carefully restricted improvements, plus a sound sales policy.

Credit for the remarkable success of this great undertaking, which already has resulted in the sale of some 16,000 acres to more than 100 buyers, is given to J. V. Mendenhall, president.

Mr. Mendenhall, in developing the Holland tract, has not been engaged simply in selling land. He has attempted to place upon the rich soil active, aggressive American farmers — men who would appreciate and take advantage of the unusual opportunities presented.

Furthermore, he has operated entirely upon the budget system, forcing development work to pay its own way, and never "overstepping" in order to make haste.

Probably no colonization project in California has been more carefully worked out. In the course of the original survey, 73 corners were marked by cement monuments. Ten subdivision maps are recorded. The land is sold free from bonded indebtedness and on such attractive terms that with even ordinary prices for produce, the buyer scarcely can fail to make good. Free title insurance is given.

EFFICIENCY THE WATCHWORD

A portion of the land is farmed directly or on shares by the holding company, this work as well as all business at the property being in charge of Gus Olson, general manager. The accounting system worked out by the Holland Company is remarkable in its efficiency and accuracy, and includes daily or weekly reports which enable the management to keep absolute check upon all operations. It is largely through this complete, yet

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J. V. Mendenhall, and Typical Young Orchard in Holland Tract, Intercropped With Beans

ORANGE BLOSSOMS—The Short Story of a Long Chance—Lingering Love and Swift Romance

By Leslie Dowell

Illustrated by George Grant

There was a note of tenderness, understanding and appreciation never before manifested in the rebellious, lovable little tyrant he had known.

MARILYN closed the door of her bedroom very softly and tiptoed down the dimly lighted hall as the clock at the foot of the stairs chimed midnight.

Descending cautiously, she reached the front porch without mishap, and, with her suitcase in one hand and her best hat, carefully wrapped in a newspaper in the other, slipped away into the darkness.

She heard in the distance, the throbbing of an automobile engine, which soon developed into a fast approaching roar. Then two lights came into view as the machine swung off the main highway, looking much like the eyes of a fearful dragon. It was her father, she knew, coming home from a trip to the city, 40 miles away.

She darted into the orange grove which bordered the road and slipped behind a tree. The automobile rolled by, and turned into the Hartman driveway. She was safe.

Soon she would be in the Land of Her Heart's Desire. Someday, when her pictures were flashed on a thousand screens and her name blazed in electric lights above the doorways of cinema palaces, her mother would forgive her for leaving as she had done.

She had almost reached the boulevard when the figure of a man bulked close beside her. A scream died in her throat as she recognized him.

"I didn't want to frighten you, Marilyn. I saw you hide in the trees and I followed you."

It was Ben Ammons, her father's foreman—war veteran, soldier of fortune, student and adventurer, with always something suggesting the mysterious in his dark eyes.

"Well, you did. You scared me almost to death. Nobody *asked* you to follow me!"

Relief, sarcasm and rebuke blended in her tones. Ben wouldn't tell that she had run away. Once he had risked his neck to get a flaming crimson flower for her, blooming in a mountain crevice. He always managed to find plenty of work to do near her when she was outside, and his eyes said much.

Love? Marilyn had mentally shrugged her shoulders at the thought. She had ambitions. Besides, Ben was too old. He must be at least thirty, and to eighteen—all-wise, all-foolish eighteen—thirty seems ancient, indeed.

"I really didn't know it was you," Ben lied quickly.

"You did too. Why don't you go back where you belong?"

She referred to the tiny house where Ben lived alone, far from the imposing many-roomed Hartman home.

"Where are you going?" Ben countered. His tone was solicitous.

"None of your business."

This in a final, crushing tone of dismissal.

"Marilyn——"

There was a pleading note in his voice, new to her, but she chose to ignore it, and walked rapidly away. Reaching the boulevard, she glanced at her luminous-faced wrist watch and smiled. Her heart pounded high with excitement. In five minutes the last city-bound stage would be along. Exactly six minutes later she climbed aboard, the only passenger, and heaved a sigh of relief.

And Ben, who had watched her from the shelter of a huge pepper tree, tramped back to his domicile—pondering, worried, helpless.

AN excited pounding at his screen door awakened Ben soon after sunrise. Jabez Hartman stood outside, half clad.

"Have you seen Marilyn? She hasn't slept in her bed all night and her mother's frantic!"

"I saw her last night."

Ben's voice was somewhat muffled as he scrambled from under the covers and reached for his clothing.

"What time?" rasped Hartman impatiently.

"Midnight."

"Midnight! Where? Anybody with her? What did she say? Where did she go?"

Hartman volleyed these questions at his employe like shots from a gun, the while running a stubby hand through his thin, fast-graying hair.

"I saw her get on the Los Angeles-bound stage."

Ben's calmness maddened the older man.

"And you didn't try to stop her? Why didn't you come and tell me?"

"It was none of my business."

"None of your business? Why I—you—"

Hartman sputtered in wrath and indignation. Ben finished dressing, methodically, precisely as was his wont. Then he unlatched the screen, Hartman came in, and they stood face to face. Ben spoke:

"Your daughter was eighteen a month ago, Mr. Hartman. She is legally of age. Neither you nor I nor any other man has a right to prevent her from going where she pleases."

Hartman glared at Ben a moment, then as the truth of the statement became apparent to him, sank heavily into a chair, his body sagging despairingly, and was silent.

Ben, moving quietly about the tiny kitchen, making preparations for his solitary breakfast, and apparently undisturbed by the domestic cataclysm, caused Hartman's wrath to flame anew.

"If you'd been any kind of a man, you'd have stopped her, damn you."

"Perhaps."

Hartman flung himself out of the house and an hour later Ben heard the family machine leaving. He surmised that Marilyn's mother and father were going to Los Angeles to bring their daughter home. Ben was right, but the thought of Hartman's square chin, and the similarity of Marilyn's, brought an odd, speculative smile to his face.

The ranchman and his wife returned late that night fagged and worn, disappointed and discouraged. Not a trace of their daughter had they found. The police, coinciding with Ben's views on the subject, had declined to aid.

With Marilyn's laughter and chatter no longer heard, and the young folks dropping in only occasionally, their visits growing further and further apart, the pall of gloom which first enshrouded the place grew heavier.

Three weeks after the girl vanished, Ben quit. Offers of higher wages and grudging but sincere praise on the part of his employer, had no effect. Mrs. Hartman followed him to the gate.

"If you see anything of my little girl, you'll be sure to let us know, Ben?" Tear-filled, pleading eyes were raised to him. He swallowed a lump in his throat.

"The minute I do, you'll hear from me," he promised, patting her on the shoulder. "I might be lucky, you know," he added reassuringly, and then set forth on his quest.

ARRIVING at Los Angeles, Ben lost no time in making the rounds of the picture studios and was overjoyed to find that a girl answering Marilyn's description had applied for work as an extra at all of them.

Twice, by the narrowest of margins, he missed her. And once, riding on a street car on Broadway he caught sight of her on the sidewalk, but before he could get back to the point where she had been, Marilyn was no longer to be seen.

Again and again he visited the studios and finally found Florence Miller, who had been a room mate of the missing girl. From her he learned that Marilyn had gone to San Francisco.

Ben went north and searched the Bay City and its suburbs day and night until his money gave out and he had to go to work. But every hour away from his job as a longshoreman was spent in the vicinity of picture theaters.

At the "California" he found Marilyn had taken part in a prologue the week before. He obtained her address, hurried downtown and discovered it to be a cheap boarding house. She had gone, leaving as her forwarding address, Salt Lake City.

A fast freight took him across the desert and to the Mormon capital, but she had journeyed on to Denver. He lost three days picking up the trail, being compelled to stop and work that he might live.

Here, too, he had a heart-breaking experience, as he was certain he glimpsed her in a crowd on upper Seventeenth street, but when he had overtaken the girl he found her to be a stranger.

From city to city, across the continent he went, always a few days or a few weeks late, but hanging on with bulldog persistency. And as the object of his search grew more and more unattainable, the stronger grew his resolution to find her, and the greater his longing.

As far east as Boston, south to Atlanta, through Texas and then northward back into California he traced her, until, exactly two years to a day from the time she had left, he met her face to face at the entrance of one of the largest of the Hollywood studios.

"BEN!"

There was welcome in her voice, her eyes, her face, as she stretched out both hands to him and he fought down a wild impulse to take her into his arms. Instead, he laughed happily, and asked:

"How have you been, and what are you doing, mostly?"

Heedless of this she demanded:

"How are mother and dad and everybody?"

"I haven't seen them for two years," he confessed. Her eyes opened wide.

"Let's go where we can talk," he suggested, and she led the way through the big gates, past towering "sets" and into a secluded, tree-shaded nook, facing a miniature African jungle.

She pulled him down beside her on a stone bench near the bank of a studio stream and, holding his hand, unashamed, ordered him to tell her everything. He talked for half an hour uninterrupted.

"And you made a tramp of yourself hunting for me?"

There was a note of tenderness, understanding and appreciation never before manifested in the rebellious, lovable little tyrant he had known.

"I was glad to do it, Marilyn."

Then hastily she began sketching her life since she had last seen him

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For and Against the California Water and Power Act

ILLUSTRATIONS BY HARLEY DAVIS

Will State Ownership Cut Power Bills?

By C. B. Henderson

THIS November the State of California will go on record for or against State ownership of the power and water utilities. There seems to be no particular dissatisfaction with present rates or the present supply of electric power. The proponents of the "Water and Power Act" seek mainly to save for the rate-payers and the tax-payers of the State the profits that are now earned by the stockholders of the privately owned companies.

There is no sharply defined issue of "public ownership vs. private ownership." A considerable number of persons who favor State and Federal title to all utilities entertain a reasonable doubt as to whether the particular bill before the people is the best way of achieving their desire. Others who mildly favor the "government staying out of business" have been mightily moved by what they feel are iniquitous provisions in this particular act. Accordingly, the vote will be on the merits of the act as drawn, not on the fundamentals of public ownership against public regulation, as the Railroad Commission now provides.

All argument accordingly simmers down to the question of dollars and cents. Will the adoption of this particular bill save money for rate-payer or tax-payer?

FIVE HUNDRED MILLION

First let us recall that the act provides for the raising of $500,000,000 to exploit the water resources of the State. Will that money be used to purchase the equipment of existing private companies? If so it will all be so used, for there is in the State today an investment of private capital exceeding this magnificent sum. That would leave no funds for development to keep pace with our rapidly growing population; and the further growth of private companies also would be effectually discouraged by such legislation.

On the other hand, suppose the State enters into competition with existing utilities. The State then would have all the advantage, because its properties would be tax free! Not that there would be relief from taxes—that is quite impossible. But State bonds would be collected from other sources and State power companies thus would be subsidized. Most likely such a condition would mean that the State would suffer a loss falling alike on all taxpayers; or that the present corporations would be ruined, with a loss of service to most of the people.

To be sure, either contingency is unlikely to develop to the extreme; the possibility being that a further bond issue would be sought later to buy out private companies. And that suggests a State debt that is staggering to even present enthusiasts for the act.

CONCERNS NOW TAXED 7½%

Under the King Bill of March 5, 1921, gas and electric companies had their tax rate raised to 7½ per cent. For every dollar that these companies take in they return 7½ cents to the public treasury. Under State ownership this tax would not be collected from rate-payers; the power bills of all might be reduced. But the money would have to be collected elsewhere. Personal property taxes would be higher and in many other ways citizens would pay an equivalent amount. The farmers of California being both rate-payers and tax-payers, the system would be just a juggling of dollars from one pocket to another. For the occasional rancher who pays taxes and does not use power, the act would confer no benefit and would add still further to his tax burden. And where is the man who buys power and pays no taxes? If such an individual actually existed he would benefit.

THEORY OF THEORISTS DISCLOSED

Here is the theory of those who sponsored the "Water and Power Act": "The privately owned and publicly regulated power companies today are allowed to charge rates that give them a return on their investment of 8 per cent. But, in the existing market for State securities, California can borrow money for 4.5 per cent. Accordingly, with the act in effect, the public will save 3.5 per cent on its investment of $500,000,000!"

We may fairly consider if this 3.5 per cent is all "velvet."

If your farm is free and clear of all encumbrance, you can get a loan from the bank at a moderate rate of interest; but if you try to borrow money on a second or third mortgage you have to pay "through your nose," as the expression goes.

The State is in exactly the same position. It must be remembered how interest rates went up when the "market" was asked to absorb millions of dollars' worth of highway bonds.

Some years ago the Province of Ontario, in Canada, was able to borrow money at the rate of 3.90 per cent. Then this Province went into the power business and was forced to float considerable loans. Today her citizens pay 6.25 per cent for their public borrowings—not only for power development, but for highway work and everything else!

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Can Private Ownership Serve Efficiently?

By Joseph Timmons

PUBLIC ownership of water, for irrigation and for domestic supply, is firmly established in California. Farmers who own their own water sources and canals, and cities which own their own water systems are fortunate. Those who are buying of private corporations are unfortunate; they are paying excessive rates and development is retarded.

The California Water and Power Act, in Section 14, fully protects local ownership and control of water in municipalities, in irrigation districts, in mutual water company areas. This last, the mutual water company protection, and it alone, has been questioned. Farmers of this class are given the benefits of the act under the section which enables the water and power board to supply water and electrical energy to "other users" as well as to political subdivisions.

As to the power of the board to condemn water owned by a mutual water company, that power is possessed now by municipalities and irrigation districts if they can establish a claim to that water for a "higher use." Such higher use could not be established by the water and power board, and no board would attempt to do so, to the certain alienation of the people upon whom it must depend for its continued existence.

IRRIGATION NEEDS SACRIFICED

Power corporations are much more active in development today than irrigation districts. Their development is power development, and generally that purpose sacrifices irrigation and flood control. It is the purpose of the Water and Power Act to subordinate power to flood control and irrigation in order to get the highest possible use of the water. Further, many projects in view are too big or involve too many complications for them to be undertaken readily by an irrigation district. State aid is needed, and that State aid has the additional benefit that State money invested will cost but about 4½ per cent interest, while irrigation districts must pay about 6 per cent.

Every irrigation district has this experience, that while the power corporations assist the movement to invest public money in irrigation works they strenuously oppose any attempt of a district to distribute power generated at the dams. They subsidize newspapers, marshal the local bankers on their side, array political influences, threaten the district's credit, and resort to obstructive suits to keep the district from reaping the full benefit, in revenues and in cheap light and power, by public distribution.

The farmers of the Modesto and Turlock districts can tell you what they have been up against in this respect. Inquire of them!

ARE PRESENT RATES JUST?

But the opponents of the Water and Power Act say there is no complaint as to light and power rates in California. They have the unmitigated nerve to assert that light and power is being furnished actually below cost and that Railroad Commission control is effective, wonderful, ideal. This in brief is their case: That rates for light and power are fixed by the commission so that never under any circumstances will the revenues be enough to more than pay the cost of the money invested—that is to say, interest on bonds and dividends on stocks; and that if a corporation makes a mistake by a bad investment of several millions, the stockholders lose.

Farmers of California have not been satisfied with light and power rates. Many of them believe those rates to be excessive and intolerably burdensome. They do not believe Railroad Commission control is ideal; they have had to make a running fight against rate increases, and to fight bitterly for every decrease. The California Farm Bureau Federation has had to spend a lot of money in that fight. Eternal vigilance will be required and much money must still be spent in that fight, at tremendous disadvantage. For the power corporations are on the uphill side, lambasting their opponents with clubs that cannot be taken from them

(Continued on Page 18)

BIG POWER *for* BIG AUTOMOBILES

You selected your car carefully for quality. Select your motor fuel the same way. It's unfair to feed a good car an inferior gasoline.

"Red Crown" answers completely the automotive engineer's demand for a motor fuel that will vaporize rapidly and uniformly in the carburetor and explode cleanly in the cylinders. *All* the heat units it contains are converted into power at the drive wheels.

"Red Crown" is uniform in quality—every gallon is the same, wherever and whenever you buy it.

Fill at the Red Crown sign—at Service Stations, at garages, or other dealers.

STANDARD OIL COMPANY
(California)

"BOB" JONES' CORNER

Little Stories of Farming

Bunting on the Job—John Bunting, the husky Hereford breeder of Mission San Jose, is established in the Merchants' National Bank Building at San Francisco, as manager of the California International Livestock Show this year. Bunting moved into an office from the range and while it took him a few days to get acclimated, he says that now he is quite as much at home in a swivel chair as in a saddle. Cattlemen, used to meeting situations, when confronted by something unusual, have a way of adapting themselves to circumstances. Bunting says there will be a good show this year and a bigger one next year. The hope and the expectation is to make this event a rival of the Chicago International. Already inquiries are being received from afar. Batcheldo Farm of Mt. Vernon, New Hampshire, has written to ask about entry fees. Inquiries also have been received from Robert E. Gallagher of Stronghurst, Ill., and from G. W. Burgess of Casa Grande, Arizona, who want to show their Herefords at San Francisco.

Robt. E. Jones

Big Prune Yield—Bill Gulliford tells me his eight-year-old prune orchard at Butte City will average four tons to the acre, according to the estimate of the packer who has purchased the crop this year. This is a remarkable yield for eight-year-old trees. The prune district of the State is shifting somewhat, for it was not long ago one thought only of the Santa Clara Valley when prunes were mentioned. Now that the prune is a luxury instead of the source of boarding-house jibes, this means something to the river bottom farmers of the Sacramento Valley. Though it is little advertised, there is one prune orchard of nearly 1000 acres on the bottom lands north of Sacramento.

"A luxury instead of a source of boarding house jibes."

Coming from Canada—California is now getting quite a number of settlers from Canada and not a few of them are settling in the Sacramento Valley. Curiously enough, these new settlers are of German and Hungarian origin. They moved from an irrigated country in Europe and became wheat farmers on the plains of Canada. There they made money raising wheat during the war. With their wheat money they are coming to California to raise truck crops, fruit and chickens, which represent a sort of agriculture more akin to their early environment. It is an interesting fact, too, that many Americans move from the eastern and northern States to Canada and eventually find their way to California. They go to Canada to make a stake and come to California to live and increase the stake.

Like and Unlike California—S. D. Sandfillipo, a successful prune grower of the Santa Clara Valley, tells me that fruit growing in California is not very much different from fruit growing in Sicily, whence he came as a boy. In Sicily, a 10-acre orchard is a farm of monster size, while in California we no longer marvel at 1000-acre fruit plantations. Irrigation is practiced in Sicily quite as much as in California. Water is even more valuable there than here and is never allowed to waste itself away in open ditches. It is always piped to the orchard and allowed to flow out among the trees where it will do the most good. Sicily, as every California citrus grower knows, is California's principal competitor in lemon production.

Back from Hawaii—Dr. Elwood Mead returned recently from a trip to Hawaii, where he went at the request of the territorial government officials to tell something about California's intelligent method of land colonization. Over there they face the same problem we have here in the States and a definite plan to keep the agricultural class on the land is being worked out. Dr. Mead made several addresses while away.

Intercropping—On a recent visit to Big Basin, Santa Cruz County, where there is a fine grove of Sequoia Sempervirens (the coast redwoods), I noticed the floor of the forest sustained a thick growth of underbrush, laurel, pines, ferns and whatnot. It seemed here was the answer to those who say intercropping cannot be practiced successfully in a young orchard. Surely soil was never called upon for greater effort than to produce such trees as the giant redwoods—yet this same soil also grows an almost impenetrable mass of smaller vegetation.

Thanks from Next Generation—State Forester M. B. Pratt is to be congratulated upon the fine appearance of the new State Forestry roadside tree nursery on the New York-to-San Francisco highway near Davis. This nursery was started less than two years ago, yet today the entire area of the land is covered with a fine stand of young roadside trees of various kinds. The buildings are surrounded by beds of blooming plants and themselves are of neat, practical appearance. The next generation will thank the State for this nursery when tourist parties stop by the wayside under the shade of trees to enjoy a picnic lunch. In the meantime, one of the principle jobs is to keep the young trees along the highways alive until they are large enough to withstand careless burning of dry grass.

They Kick Up the Dust—How many chickens are there in the Petaluma district? Nobody can say, though this California poultry colony is recognized as being the most concentrated egg-producing district of the world. Perhaps this will give some idea: The atmosphere of the Petaluma district in summer is always hazy, as if a fog prevailed there. The oldest inhabitant says, however, that this is just a dusty condition caused by so many chickens scratching.

"Accounts for the hazy atmosphere."

Fly Repellents for Cows—How long is a spray, used to repel flies, effective? Tests recently conducted by the California Department of Agriculture show that a period of five or six days is the maximum for the common preparations. Many dairymen have maintained internal medication was of value in protecting cows from flies, but recent experiments with such remedies by Government experts have prompted the following statement. "It seems safe to assume that internal remedies will never prove practical in repelling flies." The California department recommends the following mixture for use on dairy cows.

Fish Oil	100 parts
Oil of Tar	50 parts
Crude Carbolic Acid	1 part

Apply the mixture with spray pump. The duration of effectiveness will depend upon atmospheric conditions.

Getting Ahead With Poultry

By Robert E. Jones
CONTRIBUTING EDITOR OF ORCHARD AND FARM.

POULTRY raising in California is a branch of farming worthy of any man's intelligent application. It can be handled on such a scale as to command the full time of a man capable of managing a department store, or it can be employed profitably as an avocation in a back yard.

This short story is to tell briefly of two Californians who have made a success with poultry, one in a large way and the other with just a few hens in his back yard. With the first man, poultry farming is a business. He makes as much money in a year as the upper two per cent in any sizeable city. The other man has made just as much a success in his small way.

First, however, it is well to point out that poultry farming, as the 1920 census shows, brings to California each year $15,293,570. Anyone knowing the census enumerators as the most conservative citizens we have will realize that these figures are well below the market.

TREMENDOUS ASSET

In value of chickens the leading counties of California are rated as follows:

Sonoma	$4,221,336
Los Angeles	2,351,386
San Diego	623,788
Tulare	473,057
Alameda	450,329
Santa Cruz	382,569
Fresno	380,780
San Joaquin	377,558
Imperial	366,927
Sacramento	364,774
Santa Clara	358,950

The total number of chickens in the State, according to the census of 1920, was 10,426,648.

With this preliminary announcement, we shall introduce Leland Fobes of Rocklin, Placer County, successful poultry farmer. In the beginning Fobes was a teacher of pianoforte, but his doctor told him he must go to the country for his health. He had inherited 80 acres of brush land, worth anywhere from $25 to $80 an acre, and moved out onto this with little capital. This land could produce good fruit, but it had to be cleared and establishing an orchard would be a matter of many years' effort.

His initial investment was $500, plus some borrowed money. Improvements that first year consisted of a small house, a small poultry house and a dug well, from which water was lifted by chain and bucket. Four years later Fobes had nine permanent and "summer auxiliary" poultry houses, a 2000-chick brooder house, a fine bungalow, surrounded by two acres of lawn which furnished "clippings" for his hens, a motor truck and a private automobile and was a director of the Central California Egg Producers Association.

HOW DOES HE DO IT?

How did he do it? That is a question difficult to answer. Basically, however, it may be said that he studied the hen and cared for her as he would a child. He used his head as well as his hands. He thoroughly systematized his plant, eliminating a big labor factor which always is important in poultry raising.

He has studied feeding carefully so that his birds are always in good condition and are capable of producing the maximum in eggs. He feeds a great deal of green stuff, but also plenty of heavier material to stimulate production.

He banishes the broody hens and keeps them all busy with a heavy litter on the floor of his houses.

Fobes make it a point not to frighten his hens by any unusual noises about the houses, for he realizes that the heavy egg producer, like the musician, is temperamental and does not do its best when disturbed. This is just a sketchy story of Fobes—he welcomes visitors. Those who want to know more about his success, should visit his place.

ON A SMALL SCALE

While, as stated, poultry raising is a big business in California, there are hundreds of thousands of dollars worth of eggs produced in the back yard. We shall introduce, therefore, one P. F. Bunker of Berkeley, a man who spends his days in San Francisco, but gets a great deal of pleasure and considerable profit from his flock of hens. His little flock of Barred Rocks averaged nearly 200 eggs a hen and returned him a net profit of $4.89 a hen. His story, in his own words, is as follows:

"My hens were sired by a Barred Rock cockerel from the Oregon Experiment Station, bred and developed by Professor Dryden, who is the foremost egg-production chicken breeder in the world. These birds of mine were bred to lay; no attention was given to feather, and they certainly lay. You may have noticed that pens of Oregon Experiment Station birds lead in many contests.

"There is no reason why every backyard poultryman should not make a good return from his birds—providing, of course, he gets stock bred to lay. Don't go after the fancy stuff; don't go after the scrub, but get the egg-laying strain. The strain you get is of as much importance as the breed, in my opinion."

ACTUAL FIGURES SHOW PROFITS

Bunker's figures on production, feed, cost and profit are given herewith. He paid 50 cents each for the birds at 2½ weeks old, July 1st.

The figures follow:

	Feed Cost	Profit	No. Eggs
Nov. 12th to end of mo.	$1.20	$1.40	48
December	2.00	4.05	121
January	2.25	5.77	148
February	2.25	3.32	128
March	1.75	2.75	146
April	2.00	2.90	133
May	2.65	1.88	121
June	2.25	1.80	108
July	1.60	2.43	88
August	2.00	2.05	81
Total	19.95	29.35	1120

Average eggs laid, per hen, 186.75.
Average cost of feed, per hen, $3.265.
Average profit, per hen, $4.89.

RESALE VALUE ADDED

The average profit given above is based on the egg return. To get the real profit from the entire transaction, the selling price of the birds at the end of the time when they were profitable layers should be added. They sold for $2.44 each. Therefore, the profit per hen was $7.33.

This is an actual record. Of course the chickens got table scraps in addition to the feed purchased. One scarcely could expect to duplicate this in a commercial plant. But there is money in hens in California both for the commercial poultryman and for the backyard "farmer."

W. H. Young, of Downey, California (a commercial egg farmer), is said to hold the record for "production per acre." He maintains 2100 hens and pullets upon two acres, and during a period of 12 months received $10,000 in egg money alone, his cash receipts from this one source ranging from $600 to $1100 per month.

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Thirty Years With Pigeons

How to Raise Them Profitably

By T. E. Berry

PROPRIETOR OF THE LARGEST MODERN SQUAB RANCH IN AMERICA
WRITTEN ESPECIALLY FOR ORCHARD AND FARM

Part II—Breeds and Colors

FIVE solid colors are commonly recognized. They are white, black, dun, red and yellow. Of white there is nothing to say except that the color must be pure.

T. E. Berry

Black is beautiful when seen at its best, the iridescence extending from the neck well down the back, and there should be no tendency to bluishness or "bars" on the wings or tail.

"Duns" are of a wood-brown color, although the variation in shades is great. Light duns frequently have dun bars on the wings and tail, but the darker birds are free from this.

"Red" in the case of the pigeon, is a bright chestnut color not easily described. There are many shades and many opinions as to which is most desirable. At any rate, it should be "sound" throughout, with no tendency to "grizzle."

"Yellow" is a soft, cinnamon color with the usual brilliant neck, which should be tinged greenish; the shade most desired is rich and deep.

There are many other colors, such as "self" and silver, but the abovementioned are the recognized colors from which all others spring.

THE HOMER BREED

The flying homer is perhaps the nearest to the Rock Dove in appearance except as to head, which presents a straight line from crown to tip of beak. In the true flying bird, however, which is bred for strength and speed, appearance is of little importance. It is strong and light-feathered, with thick, rounded shoulders and tapering body; in attitude, always alert and bright, giving the impression of a race horse awaiting the word to start.

White Carneaux Pigeons—A "Fancy" Type

The present Homers were perfected in Belgium. The colors of the Homer are blue, black, red, checkered, and all these colors pied with white and self, are sometimes seen. However, little attention is given to color in the Homer.

The strange force that makes the Homer return to its own loft is still the subject of much discussion, the best explanation being that it is instinct, aided by careful training. It is very evident that the homing instinct is very strong in the birds, and asserts itself under the most trying circumstances, and while a young homer will easily return to its own loft from a distance of five or ten miles in any direction, training is necessary for greater distance.

The velocity at which Homers fly is of interest, as it throws some light on the question of how fast birds in general, travel. They have been known to travel 2511 yards, or nearly one and one-half miles per minute. When a message is to be carried, it is written on very thin paper and placed in a small metal tube, attached to the leg or tail feathers of the bird. The Show Homer is a larger bird, stout, straight-set and black in color.

Another type of Homer is the "Exhibition." It is smaller, with a "cobby" body and short flight feathers. The head is flat and straight in profile. I have particularly dwelt upon the flying Homer as this is probably the most popular bird in the Homer family.

England is the home of the Homer and it is there that many clubs are formed for the purpose of racing these birds, a plan that also is being followed in this and other countries. The Homer was used during the late war with a great deal of success, the U. S. Army having the "cotes" on wheels and in this way transporting them from front to front.

There is also a variety, sometimes known as the squab Homer, which has done very well as a meat producer; it represents a cross with other breeds, made for the purpose of increasing size.

THE ANTWERP

Another descendant of the Flying Homer is the Antwerp. It should not be confused, however, with the former, which was developed from the old flying birds. It is typically large and massive, perhaps second only to the Runt. There are three types, known as the short, medium, and long face Antwerps are found chiefly in blue, mealy, silver, dun, black and red, also in the "checkered."

THE DRAGON

This is an old breed and is probably a descendant of the old Carrier. It was at one time used as a messenger. The eye is bright red, and in color very much the same as the Antwerp. It is very popular among the fancy breeders.

CARRIER PIGEONS

This breed once was known as the King of Pigeons, but now has greatly declined in popularity. The Carrier is large, strong and of slender build; the legs and neck are considerably elongated, giving the bird a high "station." The chief points are in the enormously enlarged flesh-colored beak, wattle and eye core. In adult specimens the former extends to the end of the beak. These growths are in little evidence in the young bird. Carriers are found chiefly in black, dun, blue, white and pied.

THE FAN TAIL

The Fan Tail is one of the most popular fancy breeds, and is well known to every one. It is of Indian origin, and is seen in great numbers at Calcutta. The Fan Tail of today is a small, round-bodied bird, with hard, tight feathers. The head is carried far back, and when the bird is at attention should rest at the base of the tail, thus throwing the chest into prominence. The tail rises to a perpendicular and should form more than a half circle, flat and well spread The wings should drop below the tail, without catching the side feathers. The head of the modern bird is smooth, although at one time, crests were common. Colors. White, blue, black, red and yellow. There are also "saddle backs" and lace Fan Tails.

[In his third article, Mr Berry will continue the discussion of breeds, giving [illegible] interesting and ama[illegible] "Tumblers" and their fancy b[illegible] as the utility type. T[illegible] one of the most profitable [illegible] California, and is a [illegible] upon squab raising—[illegible]r.]

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Poultry Success

By Chas. Weeks

I—Choosing the Location for Intensive Egg Farming

UPON coming to California from Indiana 18 years ago, intent upon engaging in the poultry business, through my ignorance of California conditions, I made many mistakes.

For one thing, I bought ten acres instead of one. I did not know then that it is a waste of energy and capital to invest in more land than can be cultivated intensively.

My second mistake was in buying land without irrigating water. Thus, handicapped with too much land, no water, and little capital, it is little wonder that my first five years provided nothing more than experience and long hours of labor.

Another mistake was in starting with several varieties of fowls, with the intention of breeding show stock. After trying all the popular breeds, I came to the conclusion that it takes years of breeding and experience to acquire a cash-winning reputation in the show room. The poor man has no time to wait for a reputation, and at last I picked out the breed that has been my most consistent money-maker, the White Leghorn, discarding all the others.

This does not indicate there is no money to be made with the other varieties; if handled properly and alone, any breed will pay.

PORTABLE HOUSE UNSATISFACTORY

I made another error in that I began with a small portable house. I moved this over the ground, as advocated in the "Philo" system; but on account of the great amount of detail, found I could care for only about 300 birds. I did get egg production by this method, however, and it led up to my present system.

If, instead of learning by my own mistakes, I had gone to the best poultryman I could find and offered my services free of charge, I would have saved years of labor and expense. Experience is a dear teacher—some of us drop out before we graduate. Had it not been for my determination and natural love for poultry, I should have abandoned my project many times. But I felt sure there was a way to make hens pay, if only I could find it.

Eventually, it dawned upon me that hens must have plenty of green feed in several varieties.

The day I sold the waterless ten acres and bought a smaller place with water was the turning point toward success. With 500 gallons of water per minute available, I raised tons of kale, beets, chard, alfalfa, and cabbage. The key to my success as an egg farmer was feeding a superabundance of greens to White Leghorn hens, selected for heavy egg production.

The novice should remember, however, that quantity production of green feed depends upon good, fertile, well-watered soil. Thus, permanent success must be built upon the foundation of well-selected land. The price is less important than the quality. The best is cheapest in the long run. Life is too short to "fight with" hardpan, alkali, or heavy clay, when good loam soil is available.

The beginner should consider not only soil and water, but also climate and marketing facilities. California has more varieties of climate in a given area than any other state. The ideal location for egg production is within an area not more than 25 or 30 miles from the coast. The ideal egg farm should be in a region free from fogs or winds, sheltered by the hills if possible, and near enough to some large city to assure a market.

[This is the first of a series of articles by the famous "little-lander" and intensive poultry farming expert, Chas. Weeks, founder of Runnymede Colony at Palo Alto. In the next article Mr. Weeks will discuss the [illegible] of one acre in California, [illegible] more than 2000 laying [illegible] sufficient green feed [illegible] and [illegible] and vegetables [illegible] one acre.]

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Water and Power Act

(Continued From Page 12)

For the Act—By Joseph Timmons

—complicated technical and bookkeeping showings in mass so formidable as to defy any analysis but their own.

Have you stopped to think of this, that while everywhere in the State there has been this unremitting and heart-breaking fight against excessive light and power rates, under public ownership in Los Angeles there is no such fight. The people get low rates without having to give the matter even a thought. The same is true in Lodi, and in Redding, and wherever there is public ownership. More than that, a part of Los Angeles was served by the Southern California Edison Company and a part is still served by the Los Angeles Gas and Electric Corporation, and in Los Angeles those two companies reduced rates without a fight to the municipal level, far below corporation rates in other municipalities. And they made money at those lower rates!

No man capable of thinking, and honest in his thinking, believes for a moment that power corporations stay in the business just to be able to pay interest on the money borrowed by them to invest in power projects. A man who believes that would "climb a tree in quest of fish," as an old Chinese saying goes. Yet all up and down this State opponents of the Water and Power Act are telling the people just that; and adding another insult to the intelligence of the people by claiming that whenever a power corporation makes a mistake it is not able to pay even that interest. It just swallows the loss with a grin, happy in the consciousness that it is doing a noble work.

Power corporations are not philanthropic institutions.

A ONE-SIDED FIGHT

I am confining myself in this article, after the opening paragraphs, to the power side of this fight, for the sole reason that there is where the fight is. If the proposed constitutional amendment were simply a Water Act, with provision to leave power development on State water projects to the power corporations, every such corporation and every banker would be for it. The air would be full of their hats. We would not be hearing a thing about a "super-government" and all the other terrors of this "Sovietizing" Act.

How do the power corporations get out of the business more than just barely enough to pay interest on investment? They get it by neat manipulation of the financial side, the handling of stocks and bonds. There the banker licks his chops! They get it by swelling costs of construction, and getting returns on those swollen costs, to eternity. They get it by extravagant salaries and overhead. Oh, they get more out of it than the pure and ineffable joy of paying interest on borrowed money!

Lodi buys power at wholesale and distributes it, and makes nearly 30 per cent profit on its entire investment. The corporation from which Lodi buys its hydro-electric energy distributes "juice," from the same source, in Stockton, but 14 miles away, and is allowed rates ranging from 10 to 50 per cent higher than Lodi's, and supposedly makes but nine per cent, just barely enough to pay interest on its investment. "Supposedly," I wrote; such a supposition is a cruel fiction foisted on the people of this State.

MUNICIPAL OPERATION COMPARED

Los Angeles' municipal power and light plant, had it charged rates allowed power corporations in all the big cities of the State, and had it subtracted from gross revenues all operating costs and all financial requirements ,upon private corporations, including that much-flaunted 7½ per cent King bill tax, the State tax on gross earnings, would have made in the year 1921 a net profit of 24.5 per cent on its investment.

The power corporations "supposedly" make but eight or nine per cent—just enough to pay interest. It is noticeable, however, that they keep growing bigger and bigger, until soon we shall have but two or three in the State, and that they plan to invest $1,000,000,000 more of borrowed money in the next ten years, just for the fun of paying interest on that enormous sum.

Now as to taxes: Public ownership of water and power saved rate-payers in Los Angeles in 1921 a total of $9,200,000, as compared with what consumers pay for water and power in other large California municipalities under private ownership — only a little short of enough to pay all municipal taxes. Los Angeles alone could better afford to pay all the State taxes paid by all the power corporations under the King bill than to give up public ownership—for that total is less than $7,000,000. Publicly owned State water and power projects will be able to pay State taxes, if that is fiscally wise, and still supply water and power at much lower rates than we shall ever have under private ownership of these master resources.

WHAT ABOUT COSTS?

Do not be deceived by the argument that light and power rates do not matter to the tax-payer who does not use light and power. Cost of light and power enters into the cost of everything the farmer buys and it affects the cost of everything he sells. Light and power costs are passed on to the ultimate consumer.

Every farmer in California ought to have light and power, at rates low enough to make their general use possible.

In another way, cheap water and cheap power in the cities are important to the farmers. Let me illustrate. Los Angeles in the last three years has enjoyed a stupendous industrial development, due to plenty of cheap water and cheap power. That industrial growth has created a new demand for raw materials, part of them from the farms. It has been the biggest factor in a great increase in population, which has increased vastly the Los Angeles demand for butter and cream and eggs and everything the farmer grows.

To meet that demand, a rapid extension of dairying and other farming has taken place in the southern end of the San Joaquin Valley, to and beyond Tulare County. Population there has grown, new lands have been brought in, and farmers of that area are enjoying a fine prosperity, with cash coming in every month, partly because Los Angeles has cheap water and cheap power. That is what a rapid industrial development of cities throughout California, based on hydro-electric power, equivalent to the cheapest coal of the East, would mean to the agricultural prosperity and development of the State.

Against the Act By C. B. Henderson

The interested parties who drew up the "Water and Power Act" had this contingency clearly in mind. Section 6 reads in part: "and rate or rates of interest, not exceeding six per cent per annum payable semi-annually . . ." Now, even in view of Ontario's discouraging experience, it is unlikely that this Commonwealth will have to pay such tribute to those who loan it money; but it is surely to be expected that a half a billion dollar bond issue—increasing the total indebtedness of the State to 17 per cent of all the assessed property as of 1920—will raise rates to the point where this borrowing will cost the tax-payers 5.5 per cent. Right there goes glimmering one per cent of the calculated saving of 3.5 per cent! Let's see if the remaining 2.5 per cent is all profit!

FIGURES WORTH CONSIDERING

The wheels of such tremendous ventures are not going to begin to turn in a day. There will be surveys to be made. Dams will have to be built. Supplies will have to be purchased, delivered and hauled. Transmission lines will have to be constructed. Distribution sys-

tem will have to be organized to deliver the power to home, factory and farm. Granting that political employes may be able to perform as quickly as those of private corporations, where red tape is less binding, work of such a magnitude will be slow enough in getting under way. For every year in which there is a delay in completing the projects for which the money is borrowed so that they can earn a return, there will be wiped out the expected maximum saving possible for two years!

Privately owned power companies generally look on their investments as permanent. While they figure a depreciation that keeps their equipment up to an efficient operating standard, they are not collecting rates high enough to allow it to be retired. But the act specifically provides that this five hundred millions of dollars shall be returned in fifty years. That is at the rate of ten million dollars a year; and ten million dollars is 2 per cent on the whole amount! That clearly means that while we may be buying power sites, and dams, and transmission lines for our children's children, we ourselves shall profit nothing! Subtract this 2 per cent required to pay back borrowed capital and we are just one-half of one per cent to the good!

WHAT CONDITIONS IN 50 YEARS?

Perhaps a fanciful conjecture isn't out of place! How will the people of 50 years from now look on our present methods of power generation and transmission? Any student of such things will tell you of the probability that we will be getting light and heat from the radiant energy of the sun, or from atomic energy, or the harnessing of the tides, and furthermore, he will not deny the possibility of wireless transmission of power. What do you think of betting five hundred million dollars that electrical apparatus of today will be worth as much as it is now after the passage of half a century of scientific exploration? The next 50 years undoubtedly will see a development far beyond the last fifty. But this is conjecture. Let's get back to cold facts:

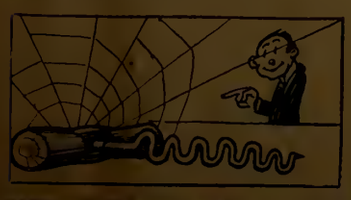
Under present conditions there are many losses in the private operation of the power companies that the Railroad Commission does not allow to be passed on to the people. If the expenses run much above the estimates, the stockholders must bear the burden. If the volume of business is much less than the amount on which the permitted rates were calculated, again does the loss fall on the power companies and not the rate-payers!

POSITION OF THE CANADIANS

Up in Ontario early in this very year there were two accidents in the big plants of the Ontario Hydro-Electric Power Commission that resulted in property damage and operating losses of nearly $4,000,000. No matter whether this financial setback was due to the natural hazards of the business or to someone's incompetency, the taxpayers of the Province footed the bill! If similar accidents had occurred in California under the present program of regulation, they would have been made up out of the pockets of the stockholders of the power company—not from a levy of the citizens of the State.

No man will gainsay the possibility of ill-advised ventures under State ownership or deny that accidents will happen, and a bare one-half of one per cent on even half a billion dollars is a scant sum to compensate for such risks.

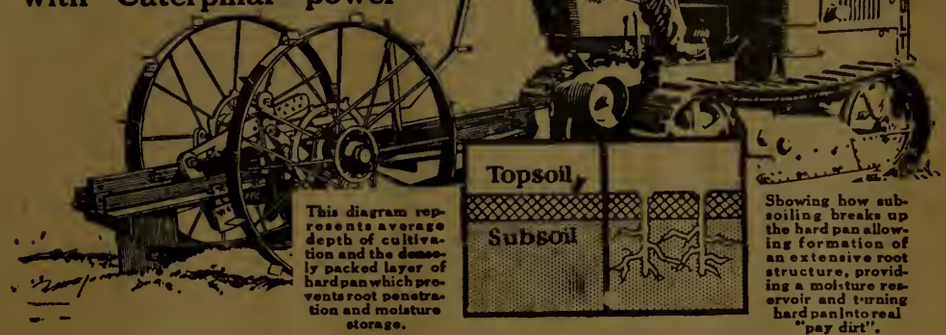
It would seem that a venture into public ownership of water and power utilities does not promise a saving for either rate-payer or tax-payer under the provisions of this particular "Water and Power Act" which comes up for the ballot in November.



"Office will be found not to be crooked enough to fit anywhere out of a job."

Turn hard pan into "pay dirt"

by subsoiling with "Caterpillar" power



This diagram represents average depth of cultivation and the densely packed layer of hardpan which prevents root penetration and moisture storage.

Showing how subsoiling breaks up the hard pan allowing formation of an extensive root structure, providing a moisture reservoir and turning hard pan into real "pay dirt".

PLOW pan and hard pan cramp root structures, prevent proper drainage, check growth and yield. Subsoiling, with "Caterpillar" power, breaks up tough hardpan, conserves moisture, increases food area for roots and makes plants more resistant to disease.

Look at some of the results as told in hundreds of letters—"My prune crop graded 21 points better to the pound after subsoiling." "24 sacks of barley against 8 by subsoiling"—"Subsoiling saves fertilizer, saves 50% in water, saves 20% in plowing."

Subsoiling by "Caterpillar" power is the proved way—the economical way of producing better and bigger crops. The "Caterpillar" T-35 Tractor is the one *small* tractor with sufficient power for the heavy work of subsoiling. While it is only 48 inches wide and 52 inches high it surpasses, in power and endurance, many tractors of much greater size. Subsoiling is just one of the many jobs that the T-35 does easily. Its versatility is amazing—its dependability insured by Holt design and workmanship.

"Caterpillar" Tractors are made in larger size—the 5-ton, Western 10-ton and the big 75—to meet any power need. Subsoil before the rainy season. Send at once for complete information.

Here's what they think of the "Caterpillar" T-35 for subsoiling:

"I used the T-35 to subsoil and went down 20 inches deep the second time and you could hardly tell it was working.
Jacob Dittenbir—Reedley.

"I have subsoiled 16 inches deep. Have also pulled a 7-foot double disc—the T-35 simply played with this load."
G. Weyand—Acampo, Cal.

CATERPILLAR

The Holt Manufacturing Co.

Stockton, Calif. Peoria, Ill.
Los Angeles, Calif. San Francisco, Calif.
Spokane, Wash.

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Improve your vacant land by planting it to trees and vines.

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Let us send you KWIK-MIX concrete mixer on 30-day free trial. See for yourself how easy it is to build your own concrete tanks, feeding floors, sidewalks, etc.

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Send no money. Pay only $12.50 after 30 days' free trial. Balance $12.50 per month for three months. Cash price $45.00. Time payment price, $50.00. Order from this Ad or send for full particulars and interesting book on concrete.

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San Francisco

$5400 From 4 Acres RHUBARB

LAST SEASON.
Big returns first season. Plant now.
Circular free.

W. A. LEE, Covina, Cal.

Stage Set for Greatest State Fair

MR. FARMER has marked his calendar as a reminder that the Sacramento State Fair opens on September 2nd and continues until the last skyrocket sputters out on the night of the 10th.

And this year Mrs. Farmer is coming, too! For the past two years Secretary Payne has carefully studied what the women like. This year the grounds will be cleaner than ever before. There will be good music—and plenty of it. There is a playground for the babies. There are adequate rest rooms. A visit to the fair insures pleasant change of scene, the meeting of many friends, many opportunities for fun and education.

RECORD TENT ERECTED

The California Tractor and Implement Club again has arranged for elaborate and thorough exhibit of the newest developments in power farming. There are 60,000 square feet under canvas in the big tent and near it a complete showing of pumps and allied equipment. The exhibit will be even more confusion-free than in past years, for the whole show is under the expert hands of W. V. Freeman.

Three of the largest companies have announced something new for the fair this year, refusing to divulge their plans before their exhibits are in place. Chairman Freeman speaks with equal mystery of an entertainment feature which is to occupy one end of the tent.

Carnival and educational alike! It makes no difference whether you come to the fair to see the horse races, to learn of modern machinery, or eat the fruit that is given away on the last day. The tractor tent has earned for itself the reputation of being the best attended structure on the fair grounds outside of the main building. This proves that after all a State fair is more an educational event than a circus.

Here's a partial list of the exhibitors:

International Harvester Co.
H. C. Shaw Co.
L. D. Armstrong Co. (Trundaar tractors)
Cushman Motor Co.
F. A. Frazier Co. (sprayers).
Standard Oil Co.
Oliver Chilled Plow Co.
Fordson Dealers.
Schmeiser Manufacturing Co.
John Deere Plow Co.
Union Oil Co.
J. I. Case Plow Works Co.
Advance-Rumely Co.
H. V. Carter Motor Co. (Allis-Chalmers, Beeman Tractors).
Pacific Implement Co.
Lytle Scraper Co.
Killifer Manufacturing Co.
Chas. Berg Implement Co. (New Britain tractors).
Junior Monarch Hay Press Co.
J. I. Case T. M. Co.
Cleveland Tractor Co.
Yuba Manufacturing Co.
Harris Manufacturing Co.
Pacific Tractor and Machinery Co. (Henneuse tractors).
Holt Manufacturing Co.
C. L. Best Tractor Co.
Knapp Plow Works.
Shell Oil Co.
Edward R. Bacon Co. (road machinery).

With prices at rock-bottom; with factories again in lively operation; with farmers replacing old and worn equipment, there has this year been an eagerness among all tractor and implement firms to make attractive display of newest devices to the critical eye of the California farmer.

Do you know what a crowder is?

Do you know about the new science of sub-surface irrigation?

Have you heard about the latest spraying method?

Do you know how to rig up your pump to get fire protection on your farm?

These questions and many others you will find an answer to in the big tractor tent in Sacramento.

LIVESTOCK A LEADING FEATURE

Livestock this year will more than maintain its position as a leading feature.

Not only will the large departments of last year continue to increase in extent and interest, but several other departments, notably Holstein, milch goat and sheep, will assume outstanding proportions.

Following is the list of entries to date of going to press:

LIGHT HORSES

Mrs. Winslow Andereon, Pleasanton, Cal.
H. G. Ranch (H. and B. M. Gantz), Buellton, Cal.
Henry Delaney, Fair Grounds, Sacramento, Cal.
Mrs. Frank Hart, Rt. A, Box 174, Modesto, Cal.
Mrs. Charlotte Anderson Duncan, Pleasanton, Cal.
S. A. Woodruff, 3300 Riverside Road, Sacramento, Cal.
C. L. Swinney, snms.
L. Spence, Mountain View, Cal.
Patrick Foley, Fair Grounds, Sacramento.
Walt Tryon, Fair Grounds, Sacramento.
Josephine Thomas, Beverly Hills, Cal.
Tim Anspach, 1326 N St., Sacramsnto, Cal.
Revel Lindsay English, Chino, Cal.

DRAFT HORSES

E. Dunlap, Diamond Springs, Cal., Shire.
Bassett Bros., Hanford, Cal., Percheron.
F. J. Moinke, Box 476, Bishop, Cal., Belgian.
Calif. Polytechnic School, San Luis Obispo, Percheron, Clydesdale.
S. A. Woodruff, 3300 Riverside Road, Sacramento, Jacks, draft in harness.
L. A. Hall, Rt. 2, Box 733, Mountain View, Cal., Percheron.
Foley & Herspring, Fair Grounds, Sacramento, Belgian.
O. H. Brandt, Shellville, Cal., wagon horses, Clydesdale.
G. L. Miner, Davis, Cal., mule tsams.

CATTLE—BEEF

Caledonia Farms, West Sacramento, Cal., Shorthorns.
Howard Vaughn, Dixon, Cal., Shorthorns.
Straloch Farms (C. Harold Hopkins), Davis, Cal., fat cattle, Shorthorns.
Thos. J. Miller, Hollister, Cal., Shorthorns.
Pacheco Cattle Co., Hollister, Cal., Shorthorns.
Wm. Briggs & Sons, Dixon, Cal., Herefords.
J. A. Bunting, Mission, San Jose, Cal., fat cattle.
C. S. Howard, Willets, Cal., Herefords.
E. A. Noyes & Sons, Sutter, Cal., Herefords.
H. A. Baldwin, Pleasanton, Cal., Herefords.
Chas. Rule, Janner, Cal., Herefords.
G. W. Burgess, Casa Grande, Ariz., Herefords.
H. H. Gable, Esparto, Cal., Herefords.
G. W. Emmons, Diablo Stock Farm, Danville, Cal., Herefords.
J. H. Cazier & Sons, Wells, Nev., Herefords.

CATTLE—DAIRY

Millbrae Dairy, Millbrae, Cal., Holsteins.
California Junior Republic, Chino, Cal., Holsteins.
California Polytechnic School, San Luis Obispo, Holsteins, Jerseys.
Fred Hartsook, Lankershim Cal., Holsteins.
Earl Ahmenn, Rt. 4, Box 151, Bakersfield, Cal., Holsteins.
Ellis Snow, Rt. A, Box 222, Bakersfield, Cal., Holsteins.
J. Rudolf Tanner, Morro, Cal., Holsteins.
Samuel Beacke, Galt, Cal., Holsteins.
Ferdinend R. Bain, 724 S. Spring St., Los Angeles, Jereeys.
Warren C. and Cecil O. Day (Ranchito Lilydale), San Luis Obispo, Jerseys.
John A. Norton, 4748 Elliott Ave., Sacramento, Cal., Jerseys.
J. E. Wherrell, 1581 Sedgewick St., Riverside, Cal., Jerseys.
Chas. F. Krause, Box 503, Orland, Cal., Jerseys.
Max W. Krauss, same, Jerseys.
Guy H. Miller, Rt. 1, Modesto, Cal., Jereeys.
J. E. Thorp, Lockeford, Cal., Jerseys.
Waterloo Jersey Farm, Lockeford, Cal., Jerseys.
Harry H. Cook, Rt. A, Chino, Cal., Jerseys.
J. R. Tanner, Morro, Cal., Jerseys.
W. J. Hackett, Rt. A, Box 17, Ceres, Cal., Jerseys.
N. H. Locke Co., Lockeford, Cal., Jerseys.
W. H. Hunnett, Orland, Cal., Jerseys.
Judge Pster B. Shields, Sacramento, Cal., Jerseys.
A. B. Humphreys, Escalon, Cal., Guernseys.
Italian Vineyard, Guasti, Cal., Guernseys.
Arnold Cattani, Rt. 4, Bakersfield, Cal., Guernseys.
H. G. Ranch (Harry and Beatrice M. Gantz), Buellton, Cal., Ayreshires.
Alexander & Kellogg, J. D. Rows & Sons, Davis, Cal., dairy shorthorns.
Thos. P. Harrison, Box 108, Santa Rosa, Cal., dairy shorthorns.
Chas. L. Weaver, Tulare, Cal., dairy shorthorns.
G. A. Murphy, Perkins, Cal., dairy shorthorns.

GOATS

F. M. Duckles, Paradise, Cal., Anglo-Nubian.
Winthrop Howland, Live Oaks Canyon, Redlands, Toggenburg.
H. F. Schinker, Rt. 1, Box 103, Eagle Rock, Los Angeles, Saanen.
Mrs. C. E. Ward, Rt. 1, Box 102A, Folsom, Cal., Anglo-Nubian.
Edith Ward, same, Anglo-Nubian.
M. D. Woodruff, Paradise, Toggenburg.
A. M. Brown, 2015 C St., Sacramento, Cal., Toggenburg.

SHEEP

Bullard Bros., Woodland, Cal., Ramboulliet.
Straloch Farm, Davis, Cal., Hampshires, rangs.
W. Briggs & Sons, Dixon, Cal., Ramboullet.
George Phillips, University Farm, Davis, Cal., grade.
G. N. Morritt & Sons, Woodland, Cal., Ramboullet, range, Merino.
Ardenwood Karakul Sheep Co., Oakhurst, Cal., Karakuls.
J. G. S. Hubbard & Sons, Wren, Ore., Southdowns, Oxford, Dorset Horns, range, Lincoln.
Spender Ranch Co., Cranmore, Cal., Hampshirs, Romney, range, grade, fat.
Corriedale Sheep Co., Southdown, Leicester, Corrisdale, Shropshire, grads, rangs, Lincoln.
Eugene C. Twibbis, Rt. 3, Box 123, Lodi, Cal., Romney.
Miller & Lux, San Francisco, Cal., range, various, Dorset Horn, Romney, Shropshire.

SWINE

Italian Vineyard Co., Guasti, Cal., Berkshires.
A. B. Humphrey, Escalon, Cal., Berkshires.
C. T. Johns, 304 Granada Court, Ontario, Cal., Berkshires.
Calif. Polytechnic School, San Luis Obispo, Cal., Berkshires, Duroc-Jersey, Poland-China.
Pacific States Corporation, Tagus Ranch, Tulare, Duroc-Jersey.
Chas. J Lemoyne, 724 Lankershim Blvd., Lankershim, Duroc-Jersey
Dr. A. Russell, P. O. Box 321, Lankershim, Cal., Duroc-Jersey.
Mr. and Mrs. A. D. Long, P. O. Box 5 2, Davis, Cal., Duroc-Jersey.
Western Laboratories, Rt. 6, Stockton, Cal., Duroc-Jersey.
Lowell J. Weaver, Rt. C, Box 397, Fresno, Cal., Duroc-Jersey.
Avedis Magacklan, Rt. C, Box 398, Fresno, Cal., Duroc-Jersey.
J. C. Craig, Owensmouth, Cal., Duroc-Jersey.
J. E. Thorp, Lockeford, Cal., Duroc-Jersey.
Bassett Bros., Hanford, Cal., Poland-China.
Straloch Farm, Davis, Cal., Poland-China.
Fred D. Grant Jr., Box 46, Fresno, Cal., Poland-China.
Kern County High School, Bakersfield, Cal. (Agricultural Club, Eugene Buerkle, Vivian Mirley, Sheldon Morley, Bob Watts), Poland-China.
Johnnie Giusing, Winton, Cal., Poland-China.
P. E. Mitchell, Atwater, Cal., Poland-China.
Gatewood & Stephens, Rt. 1, Box 424, Fresno, Cal. (Fred Gatewood, Helsn Gatswood), Poinnd-China.
A. Buckland & Sons, Rt. E, Box 126, Fresno, Cal., Poland-China.
Mrs. A. C. Buckland, same, Poland-China.
C. E. Johnson, Rt. 4, Box 241, Turlock, Cal., Poland-China.
H. G. Johanson, Rt. H, Box 260, Fresno, Cal., Poland-China.
L. E. Hughson, Ahuahnec, Cal., Poland-China.
Hayes & Harter, Rt. 4, Grants Pass, Ore., Hampshire.
Francis T. Underhill, Santa Barbara, Cal., Hampshirs.
Howard Vaughn, Dixon, Cal., Chestsr White.
Jas. J. Summerfield, Santa Rosa, Cal., Tamworth.
Italian Vineyard Co., Guasti, Cal., Fat Barrows.
Howard Vaughan, Fat Barrows.
Bassett Bros., Fat Barrows.
Mr. and Mrs A. D. Long, Fat Barrows
Frsd D. Grant Jr., Box 46, Fresno, Cal., Fat Barrows.
Napa State Farm, Yountsville, Cal., Fat Barrows.
Francis T. Underhill, Fat Barrows.

Big Plans for L. A. County Fair

SINCE the announcement was made some months ago of the plans for the holding of the Los Angeles County Fair at Pomona, much interest has been shown by the livestock raisers of the State as well as the agricultural interests. The date for the fair will be October 17 to 21 inclusive.

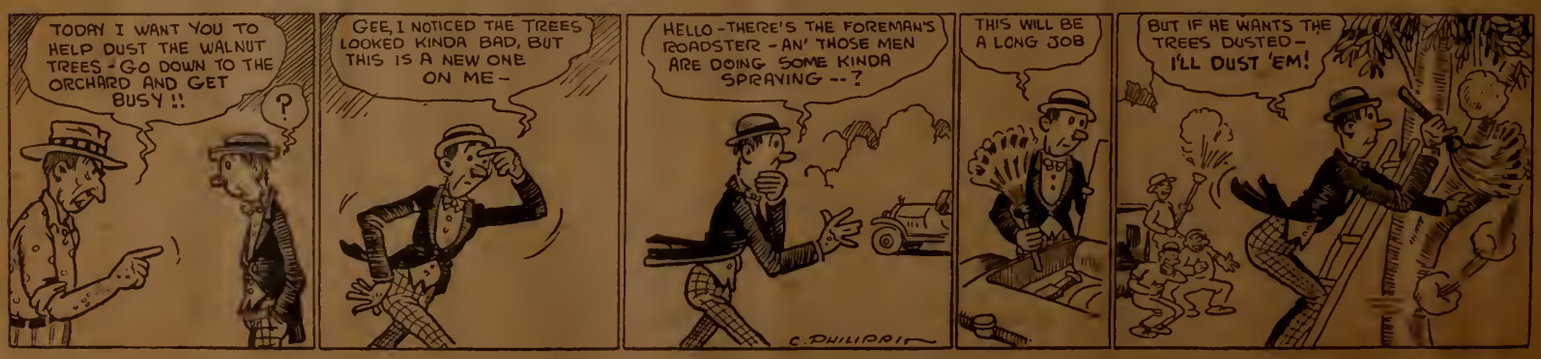
Although it is yet early to give definite details, it may be stated the fair is assured of the participation of a great number of exhibitions in every department. Men who follow the racing game on the coast, men who are leaders in the livestock business and men who follow the agricultural pursuits, have pledged support in presenting exhibits which will at once make the Pomona Fair as large as the fair organizations which have been running for a number of years.

The city of Pomona purchased forty acres of ground adjoining Ganesha Park, a very pretty section of Pomona. The Board of Supervisors made a donation of $10,000, the understanding being that this money would be used for premiums. The development of the big fair grounds was financed strictly by the Pomona people. Eight permanent buildings 30x200 feet have been constructed, five huge tents have been engaged, a grandstand is being built; in fact, Pomona is going at the proposition with the idea of permanency.

The departments to be featured are those devoted to poultry, rabbits, cattle, horses, swine, goats, sheep, guinea pigs, agricultural industrial and farm implements. The automobile and tractor will play an important part; there will be a daily racing card. A night horse show, chariot races and many other entertainment ideas will be included.

The entire county of Los Angeles is being visited by representatives of the Pomona Fair in an effort to have all sections represented. In addition, stock raisers and agriculturalists in Northern and Central California also are being visited to insure statewide representation. There is every indication that the Pomona Fair as planned will be able to house all the exhibits that have been promised, but it will tax all available space.—E. M. Gore.

The "Green Hand"—He Must Have Had Domestic Training -- By Phillipi



Southern California Fair

By E. M. Gore

THE prevalent movement for quickening the interest of the youthful agriculturist or stock raiser in his endeavors is to be given a generous impetus by the Southern California Fair, to be held on October 10 to 15 in Riverside.

A junior fair is to be included within the plans for the larger and more general fair, which now is being arranged.

MANY CLUB EXHIBITS

Hundreds of exhibits from the many pig clubs, calf clubs, poultry clubs and agricultural clubs are to be entered. Each of these will represent the finest production of the respective organizations, and each will be personally accompanied by the expert young Southern Californian, whose industry, perseverance and skill made possible the attractive display.

At conclusion of the exhibiting period, awards are to be made, thus establishing some lasting trophy, which these industrious juveniles may retain as an inspiration for further zealous and conscientious endeavor.

Much satisfaction has been expressed by the fair promoters in the men they have secured to take charge of the junior end of the event. In nearly every instance these effective organizers are agricultural experts who have enjoyed long experience in the training and gentle ruling of children. Many are from the agricultural departments of schools, or have had experience in the work of county farm clubs.

ORMOND IS SUPERINTENDENT

Ben H. Ormond, of San Bernardino, former assistant farm director of that county and one of the real aggressive leaders in junior education, has been named superintendent of the club division.

He, in turn, has a corps of advisers for his varied departments, each of whom is said to be admirably fitted. Phillip Griffin, of the agricultural department of the San Bernardino High School, is cattle department adviser. Charles Perrin, of Chaffey, is adviser of the swine department, and numerous other representative men from nearby counties have been obtained to head the other divisions.

Proper methods of handling different varieties of live stock are to be given a thorough exposition at the fair. This is one of its most important divisions, it is said.

The section embodying these features is to be known as the "demonstration farm." In this will be shown the most up-to-date schemes for housing and caring for poultry, pigs and dairy cows, while alongside will be modern replicas of silos, home gardens, orchards, fields and crops.

Live stock judging is to be given ample play, according to the fair program. Boys and girls alike will be entered in such contests, which are statewide. The judging is under direction of a committee headed by J. D. Lillard, director of agricultrual education of the state.

Lady Pig Judges and Cups Won at 1921 Event

NORTH AND SOUTH REPRESENTED

Supporting him as committeemen are R. A. Condee, Chino; E. J. Werner, of Esparto, and Prof. E. H. Hughes, of Davis. To avoid bringing a quota of juveniles from the northern end of the state, two judging contests will be held, one at Riverside and one at Davis. The three highest teams at each try-out will compete at the northern city at a later date, it was announced.

A vocational exhibit, of which Professor H. H. Bliss, of the Riverside High School, is in charge, is to feature the products made by clever Southern California youngsters through the vocational training now imparted in high schools. Parents have been particularly advised to pay close heed to this section of the fair, as it is said they can apply many of the ideas to be noted there in the home training of their children.

Great Pageant of Progress Looms

THE claim that the California Pageant of Progress and Industrial Exposition, to be held in Exposition Park, Los Angeles, August 26-September 9, will be the greatest display and entertainment of its kind the West has ever known seems to be borne out by the facts in a nutshell, just compiled by the Los Angeles Chamber of Commerce, under the auspices of which the exposition will be held:

The grounds cover 35 acres.

There are 681 exhibition booths, [illegible] 40 feet.

More than 100 men worked for two months constructing the temporary buildings and preparing the grounds.

The collective exhibit will be insured for more than $2,000,000.

More than 3,000 kinds of articles will be shown.

The amusement feature is a reproduction of the New York Hippodrome [illegible] and [illegible] have been brought to the Coast.

More than 2,000 people will participate in the entertainment features.

Six hundred voices will be heard in one chorus.

Two hundred of New York's most beautiful show girls will appear in the Water Carnival.

The Chateau Thierry spectacle will require 400 soldiers to stage, in addition to 20,000 pounds of powder daily for the fireworks and cannonading.

Championship auto polo matches between the Pacific Coast and British champions will be played daily.

A huge restaurant, hospital, fire department and every convenience for the public have been placed on the grounds.

To view every exhibit and attraction the visitor will have to walk seven miles—or the distance from the Los Angeles courthouse to Highland Park.

E. M. GORE.

straight furrows

the front wheel

The front wheel of the YUBA tractor relieves the driver of most of his work. Straight ahead it goes—equalizing soft spots and checked rows. And it answers to a light touch on the steering-wheel; the clutches are used only on a sharp, end-of-the-row turn.

Perhaps it costs less to build a machine without the front wheel. But the YUBA owner demands perfect control; refuses to "slip" clutches; insists on straight furrows and comfort in the seat.

And the YUBA front wheel gives him all that!

Yuba Products Company

433 California Street, San Francisco, California

Dealers and Branches in All Principal Cities

Models 15-25; 25-40; Rodebilder

FRUIT TREES

Write for Price List!

THE FRESNO NURSERY CO.

Fresno, California.

Camera Stories of California's Glories

COUNTRY HOMES, in California, leave nothing to be desired. These are at Tisdale, in the famous, fertile Sutter Basin, near Sacramento.—McCurry photo.

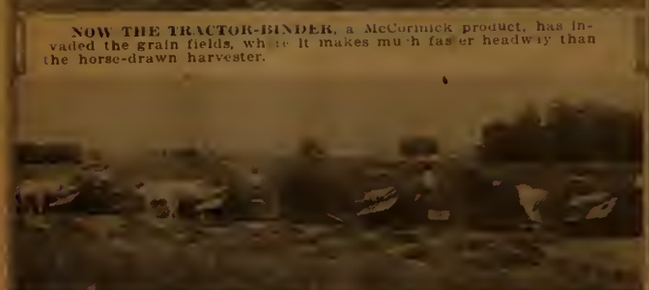
ABOVE—Onions and potatoes produce like this in reclaimed lands "down river" from Sacramento.—(Courtesy Reclamation Land Co. McCurry photo.)

LEFT—Great concrete arch dam at "Lake Hodges," one unit in tremendous irrigation project for San Diego and South Coast district.

NOW THE TRACTOR-BINDER, a McCormick product, has invaded the grain fields, where it makes much faster headway than the horse-drawn harvester.

BELOW—This is the strange "Snow flower" of Yosemite Valley, described on the Boys and Girls' page of this number.

BELOW—Who says bottle-fed babies aren't healthy? Willie Jones expects to sell his pigs, when grown, for enough to buy a new bicycle.



A FRENCH SCENE, showing similar binders drawn by oxen and horses.—Both photos courtesy Int. Harvester Co.

REFLECTIONS of luxuriant foliage in clear, cold water, where a few years ago only the mirage appeared, to mock the desert traveler. (Irrigation reservoir at Adelanto, Victor Valley.)

PROTECTION of low-hanging limbs is accomplished by this Yuba [illegible] through the use of metal covers for tracks and implement.

Man and "River Bottoms"

By Robert E. Jones

CIVILIZATION began along rivers. Instinct of primordial man led him to the richest soil. There he built his rude hut and, with his mate woman, set up the first home. The alluvial soil, or river sediment, fertility of the hills washed down and mixed with leaf mold and decayed vegetation, bringing forth luxuriant growth. Game animals were there, too, for food. Primordial man scratched the soil and brought forth his primitive corn He stuck to the river borders, for there life was most luxuriant, the soil was richest.

Latter-day civilized man, through reason and knowledge, knows that "river bottom" lands are the richest. In California he can take an airplane and, viewing the landscape from above, note the luxuriant belts of verdure that follow the river courses. He knows the principal towns and cities, which depend upon agriculture for their support, are centered in "river bottom" areas, never far from some stream that has washed from the mountains and hills fertile soil to form the river borderland.

A Busy Harvest Scene

The cantaloupe crop is a great and profitable asset to the Sutter Basin district, near Sacramento. River bottom cantaloupe excel particularly in yield, but are famous also for flavor.

RECLAIMED LANDS

In the Sacramento Valley of California, with its giant Sacramento River, fourth largest stream for run-off in the United States, there are thousands of the richest of river bottom lands.

Sutter Basin is the last unit of these lands to be reclaimed. There "Nature has been turned topsy turvy" by the wonderful work of engineers.

During the last thirty or forty years these areas have been gradually reclaimed from the rivers by civilized man and his machines. In early days the work of reclamation—of levee building and digging drainage ditches—was done by Chinese labor and wheelbarrows Then came the era of Fresno scrapers and horses. But the ultra-modern day of reclamation has brought giant mechanical devices for the work, thus immensely reducing the cost and making it possible to build projects heretofore only dreamed of. The latter-day devices of reclamation have been monster clam-shell, drag-line and suction dredgers, gasoline-operated ditch diggers and the like. Human hand labor and even stock has been superseded by mechanical devices.

MACHINERY DID IT

It was this ultra-modern era of machinery that brought Sutter Basin, "the last of the famous river bottom lands" in the Sacramento Valley, into being. It was this ultra-modern era of machinery that held the cost of this work to a minimum. Had it been done in the earlier day of hand and stock labor, the cost would have been almost prohibitive.

Sutter Basin today is an area of more than 45,000 acres of almost virgin river bottom lands of the Sacramento Valley. It occupies a keystone position in the valley. It is the very heart of the "river bottom" area. It awaited the coming of a big enterprise and of giant machines to be made ready for man. Today it is completely developed, the soil is thoroughly tried and proved; it has irrigation, drainage and transportation, and is rapidly becoming a region of homes. This great area of land is adapted to any crop known to California agriculture. Here can be grown in abundance virtually any soil product beneficial to man.

A VAST GARDEN

Sutter Basin today is a vast garden area, suited to and with facilities for the production of the highest quality and most valuable California crops. It is being peopled by farmers who look forward to the growing of deciduous fruits and grapes, alfalfa, corn, beans, livestock and to dairying and poultry. They are coming from Canada, as well as from other parts of the United States.

It is estimated by experts that Sutter Basin, in a few years, will have a rural population of more than 12,000.

Practice vs. Theory

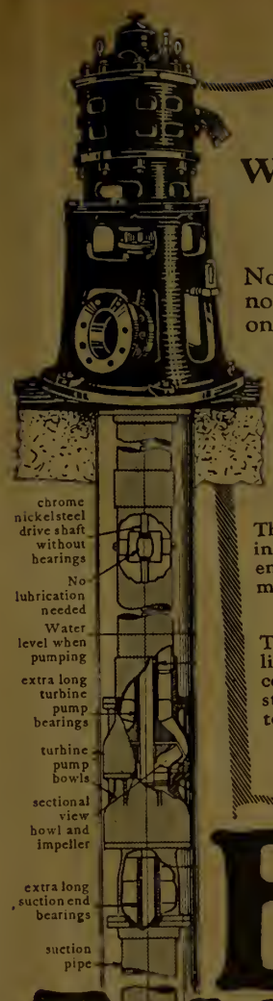
By Justin Nutt

THE poets write odes to "the man with the hoe,"
But I wonder if ever a poet did know
The feel of a hoe in his lily-white hands—
Or of feet that were blistered from treading the sands?

Oh, it's hoe for the pumpkins, and—
Hoe for the corn,
Hoe in the evening and hoe in the morn.
Sunburn and callouses—these things I know
[illegible] in the rhyme of the man with the hoe!

[illegible] many things "owed" to the man with the hoe;
[illegible] he sweats that the weeds may not grow
[illegible], and his language is terse,
[illegible] a living at writing in verse!

[illegible] pumpkins, and
[illegible] corn,
[illegible] and early at morn.
[illegible] would be rather slow
[illegible] man with the hoe."



A Pump without lubrication troubles

No lubrication troubles because there are no under-surface bearings to lubricate. The only lubrication required in the New Bean Turbine is in the head, where a radial thrust bearing operates in an oil bath. We have eliminated all drive shaft bearings through improved construction. The advantages of this construction are at once apparent.

Built in All Sizes from 6-inch up

The Bean Turbine goes into a bored well—or into your old pit, if you have one. It is suspended entirely from the surface—and can be easily removed when desired.

Efficient—Economical

This pump develops surprising efficiency and delivers the maximum of water at the minimum of cost. Requires little attention and the heavy substantial construction insures long and satisfactory service.

Send the coupon for Turbine Pump Bulletin —also, ask for catalog of Horizontal Pumps, if interested.

Bean Spray Pump Co.
101 W. Julian St., San Jose, Cal.

Bean Turbine Pumps

BEAN SPRAY PUMP CO., 101 West Julian St., San Jose, Calif.
Gentlemen: Please send me your pump catalog as follows:

.....New Turbine Pumps .....Horizontal Pumps

Name .....Street or R. F. D.....

Town .....State .....

Herbicide kills weeds cheaply, effectively

Satisfaction Guaranteed

Destroys, *absolutely*, all pest weeds, noxious grasses, vines, shrubs, including Johnson, Bermuda, Morning Glory, Crab, Nut, Bronco, Water Grasses, Malva, Thistle, and all other noxious plants.

Herbicide is a triumph of modern science. It is a combination of chemicals, which, when sprayed on the foliage, permeates the entire sap system of the plant, and kills it root, branch, seeds and all. Inasmuch as the seeds, also, are killed your next season's crop of weeds will be lighter and eventually you will banish them entirely.

Herbicide is *extremely economical* and easy to use. Does not require a professional sprayer. To save freight we ship in concentrated form—one gallon makes ten gallons of spray. This is one of the reasons why Herbicide is a more economical spray to use.

Herbicide is tried, tested, proven. It cannot fail to remove noxious weeds in the cheapest and most effective manner known. *Now is the time to kill them.* Enrich your land by removing worthless weeds which sap the soil.

Write for prices, today.
Herbicide Chemical Laboratories,
1963 Santee St., Los Angeles, Cal.

For bigger crops next year Irrigate now!

A sturdy, dependable PRICE pump, put to work for you during the Fall, will pay you big dividends in next year's crop.

PRICE pumps are made by pioneers who built the first centrifugal pumps west of the Mississippi. In the PRICE pump of today you get strength and simplicity, combined with every worth-while improvement.

There is a PRICE pump that will exactly solve your water problem. Ask for our catalog showing some of the models.

G. W. PRICE
PUMP & ENGINE CO
Manufacturers
Members Western Irrigation Equipment Assn.
33 STEVENSON STREET
SAN FRANCISCO

BEEMAN
Multi-Service Tractor

THE NEW MODEL "I" IS HERE
See the changes and improvements:
New type Clutch insures positive engagement.
No Clutch slippage.
Improved implement carriage makes handling easy.
Off-set plow hitch big new feature.
Bull Wheels run on solid ground—not in furrow.
No side draft.
Arrange now for demonstration.
Motors Equipment Tractor Co.
1341 South Hope St. Los Angeles

Big Money Boring Wells

One Man One Team

Have water on your own farm. In spare time make wells for your neighbors. It means $1000 extra in ordinary years, double that in dry years. No risk—no experience needed.

Outfits for Getting Water Anywhere

Earth augers, rock drills and combined machines. Engine or horse power. *Write for easy terms and free catalog.*

LISTER MFG. COMPANY
Box 727 Clarinda, Iowa

Read the advertisements for information, diversion, education. Say: "I saw it in ORCHARD and FARM."

The Ultimate in "California Climate"

UNTIL recently one of the richest and most wonderful sections of California has lain practically undeveloped because of lack of water for irrigation.

Here, where "winter and summer are all mixed up," exists probably the most pleasing and equable climate in America. This factor alone will attract thousands of settlers now that water has been made available. But in addition to the wonderful climatic advantages is soil as fertile as can be found in this great agricultural State.

We refer to the district known as the "South Coast," between Los Angeles and San Diego, and more particularly south of Oceanside. Motorists who have driven along the beautiful highway between the two southern cities have remarked about the vast acreage of dry, undeveloped land. Within a few years this section will present a different aspect. Tremendous and inspiring events are pending.

BIG DEVELOPMENTS PENDING

Quietly and without much publicity, a number of men and organizations have been developing the water resources of the mountainous back country in the southern Coast Range.

The San Diego County Water Company, whose Henshaw reservoir has a storage capacity of 164,000 acre feet of water, is planning to spend $6,000,000 on water and power development and will provide water to irrigate more than 50,000 acres of orchards and vineyards. It is estimated this water, in addition to doubling the supply for the city of San Diego, will make possible the raising of 50,000 carloads of produce annually, and will support at least 50,000 rural population.

Credit for financing this wonderful work is given largely to W. G. Henshaw, president of the Riverside Portland Cement Company, and with him are associated officials of the Santa Fe Railway.

But it is due to the foresight of Col. Ed Fletcher, for many years a real estate dealer and civic leader in San Diego that much of the work has been accomplished. Always a believer in the future of the southern end of the State. Mr. Fletcher has worked untiringly to interest other capitalists in these stupendous undertakings.

One of the most enthusiastic supporters of the entire development has been Vice President Hodges of the Santa Fe Railway. An important reservoir in the system is known as Lake Hodges, the water here impounded being now available for irrigation of the San Dieguito ranch owned by the Santa Fe Land Company.

AN IMPORTANT PROJECT

Under the supervision of L. G. Sinnard, famous landscape architect, engineer and developer, formerly associated with the Atascadero and other big projects, this great tract is now being made ready for intensive development.

Another district upon which development has been going forward for several years and which will be greatly benefited by the new water projects is the "Carlsbad" section, adjacent to the town of Carlsbad, 85 miles south of Los Angeles and 38 miles north of San Diego.

Under the auspices of the South Coast Land Company, of which Wm. G. Kerckhoff is president, H. W. Keller, vice president; F. H. Tolle, secretary and general manager, and E. M. Claussen, sales manager, much intensive production has been made possible in this district.

Carlsbad promises to become one of the wonder spots of California for, like other sections of the South Coast and San Diego County, it enjoys a climate the equal of which perhaps is not found elsewhere in the world.

A STRANGE PARADOX

Official records show the amazing fact that although the winters are the warmest to be found in the State, the summers are cooler than in any other district outside of San Diego County.

The result of this strange paradox of nature is that Carlsbad produces almost as much in winter as in summer. Lacking the intense heat of the interior valleys, still the Carlsbad district is ideally suited to double cropping. The winter crop of green peas and string beans has become of tremendous importance. Green peppers and pimientos are produced during the entire year, shipment being made all

"ONE OF THE MOST EQUABLE CLIMATES IN THE WORLD"

Compiled from official records of H. D. Brodie, Observer for Oceanside-Carlsbad District.

	1914		1915		1916		1917		1918	
	Max. Deg.	Min. Deg.	Max. Deg.	Min. Deg.	Max. Deg.	Min. Deg.	Max. Deg.	Min. Deg.	Max. Deg.	Min. Deg.
January...	78	41	75	40	60	34	70	38	74	39
February..	82	43	75	38	74	37	72	39	82	40
March	95	46	80	40	75	41	69	36	84	42
April.....	88	49	72	47	78	45	74	39	84	44
May	72	50	81	44	70	44	73	46	75	50
June	82	54	72	54	72	50	75	50	76	56
July	78	62	78	58	74	55	74	62	74	60
August ...	78	59	84	58	76	53	75	57	79	56
September.	80	54	74	52	78	56	84	55	91	55
October ..	96	54	72	44	82	43	82	48	84	52
November.	91	48	78	41	78	40	95	44	80	42
December..	70	42	77	36	73	34	80	40	81	35

In Carlsbad District

Above—Four - year - old lemon grove. Below—Typical field of early vegetables. An area of more than 1000 acres is devoted to intensive production in this wonderful section

through January, February and March.

Carlsbad winter vegetables reach the Los Angeles market between seasons, when there is practically no competition from the Imperial Valley or from Riverside County. Other products are summer squash, cucumbers, garlic, strawberries, tomatoes and grapes. Conditions are said to be ideal also for the production of lemons and avocados. Experimental plantings of avocados, in fact, have indicated tremendous production. Young trees were observed which were loaded with high grade fruit and it is the belief of many enthusiasts that the South Coast district will develop an avocado industry of imposing proportions.

Reservoir of Oceanside Mutual Water Company

Four-year-old lemon trees have produced as much as 300 boxes of lemons from five acres. Because of the absence of extreme heat, the lemons come in late, reaching the market during the middle of summer when demand is greatest and prices most attractive.

Other orchard trees which offer great promise are almonds, figs, peaches and walnuts. A unique advantage is enjoyed in the production of berries throughout the winter months as well as summer, the grower receiving for his off-season produce two or three times the average price.

IRRIGATION FACILITIES

Present development has taken place under the irrigation system of the Oceanside Mutual Water Company. This organization obtains water from wells in the San Luis Rey River bed, where the company owns riparian rights. It is pumped into cement reservoirs and delivered under pressure to the land. This gives the rancher the advantage of household plumbing, fire protection and other conveniences enjoyed by the city residents.

Of some 2000 acres of land served by the Oceanside Company, more than half is devoted to intensive production, while new settlers are arriving constantly. With the completion of the great mountain reservoirs and water projects and the expected influx of people, rapid increase in land values is anticipated, especially along the ocean shore.

The dreams of the foresighted men who have labored so many years to carry out the destiny of this favored section of our favored State are about to be realized. Oddly enough, other sections where conditions are less desirable have been developed first. But within another decade the South Coast will undergo a transformation as amazing as anything in the annals of California agriculture.

A WORD OF WARNING

Just a note of warning, however, to the prospective settler in this wonder land! Be sure to subscribe to papers and magazines, or at least to have a calendar on the wall! Otherwise one may lose track of time entirely and be unable to distinguish between Christmas and Fourth of July.

My Experience With Cover Crops

ABOUT ten years ago, I had one acre of red "London Market" currants. Having heard vetch made an excellent cover crop, I concluded to try it and bought seed which cost me $6.50. The ground was in fine condition and I planted the vetch on September 20.

It occurred to me this was about the same as sowing money, but by May 1 the vetch was two feet high. As the currant rows were only seven feet apart, instead of turning the entire crop under, I mowed the vetch, used it for feed, and plowed the ground. The plowing was a somewhat difficult operation as the roots were heavily matted together.

No improvement occurred the first season, but the next crop of currants exceeded my wildest expectations. Many bushes bore 12 pounds, and some as much as 20 pounds, all very fine fruit.

However, in my inexperience, I found I had made a mistake in mowing the vetch. My present plan is to commence reducing the cover crop with a disc as soon as the ground is dry enough in the spring, and when the top is thoroughly cut into the mulch, I can then plow it much more easily. I am of the opinion vetch has no rival as a cover crop—labor and expense considered. Manure, of course, is the one best fertilizer, but its limited supply precludes its general use.

I cannot say that vetch is everything as a fertilizer, but I do know that it supplies nitrogen in sufficient quantities to aid trees and plants in bearing more fruit. Likewise, the condition of the soil improves from a tillage standpoint, and a greater amount of moisture is retained in the ground.

My experience has been entirely with dry farming, but the same principles would apply under irrigation. Should the ground seem a little dry when the discing is completed, if allowed to rest three or four days, it will be plenty wet enough to plow (if the discing has been thoroughly done).

Vetch not only makes an ideal cover crop for orchards and gardens, but for grain fields as well. Fifteen years ago I began to look as though the farmers in this locality would be compelled to discontinue the growing of grain, as the yield was very low and every farmer quite discouraged. Then, they commenced to use vetch with oats and besides making a very fine hay for dairy cows, this practice has almost doubled the yield of grain during the past four or five years and our land is worth more than $100 per acre.—D. R. [illegible], Salem, Oregon.

[illegible] above article was [illegible] a contest recently [illegible] and FARM [illegible] first [illegible] were published in [illegible]

[illegible] ORCHARD [illegible] and find [illegible] Editor.

International 8-16 - - - - - $685
Titan 10-20 - - - - - - - - - $700
With Free P & O Plow
[Tractor and Plow f.o.b. Chicago]

Greatest Farm Power Values—Bar None

THIS is a time for investment in Titan 10-20 or International 8-16 tractor power. Make your choice and get the complete outfit from the McCormick-Deering dealer. Every day, keep this efficient power at work at your fall plowing and other drawbar work, and tie it up to all sorts of belt machines. By winter time you will be enthusiastic about the all-around usefulness and economy of International Harvester tractors.

These tractors have enormous reserve power, as every owner knows. They pull their plows in all soils with the greatest ease, and they have extra belt power in proportion. They are famous for long life. As the seasons go on you will find them outlasting smaller, inferior tractors, actually by several years. You will find also that they do their best work on kerosene and that the expense of repair and upkeep is remarkably low.

These are the greatest of all power farming values—bar none. Nearly a hundred thousand owners are proving it. Be guided by their judgment. See the McCormick-Deering dealer.

REMEMBER that these are not stripped tractors, pared down to make low prices. Titan at $700 and International 8-16 at $685 include all essential equipment—belt pulley, fenders, platform, throttle governor, adjustable drawbar, angle lugs, brakes. This equipment for each is worth more than $100, and is necessary on any tractor to make it serviceable and safe. And above all, the prices include P & O Tractor Plows—2-bottom with the International 8-16 and 3-bottom with the Titan 10-20.

INTERNATIONAL HARVESTER COMPANY
of America
(Incorporated)
734 Lawrence St. - - - Los Angeles, Calif.
93 Branch Houses and 15,000 Dealers in the United States

"Here is Your Dream Place"

Come to Carlsbad By The Sea

Where Summers are Cool and Winters are Warm!

Location: 42 miles north of San Diego, 83 miles south of Los Angeles, on main line of railway and State Highway. On a high mesa overlooking the sea.

Right now we are preparing the soil for the winter crops, that come on the market when other districts are too cold to grow them.

THINK OF MAKING FROM

Green Peas	$500 per acre
Sweet Corn	$400 per acre
Cucumbers	$500 per acre
Squash	$500 per acre
Peppers	$750 per acre

Showing a Field of Summer Squash in Winter

Growing two highly profitable crops a year (out of season) is why Carlsbad irrigated lands are being bought daily by ranchers, fruit growers, seed, bulb and nursery men. Our district is proven; deep, rich, warm soil, an efficient water system, and a climate, second to none in the world.

Put Your Money Into a Growing Community Where Your Profit is Sure!

We offer irrigated land in tracts of from one to forty acres, on terms of 10 yearly payments. Prices and terms may be withdrawn at any time. Also beautiful homesites on paved highway, overlooking the sea. Acres for poultry, turkeys, berries, etc.

If frost, extreme heat, sandstorms, poor prices, have been your lot

COME TO CARLSBAD

where nature does her utmost for you. Where transportation is the best, where a growers association looks after marketing of your crops, and where you will be in a growing, live, American community, with good schools, churches, close by, where it is a pleasure to bring up your children.

For Maps, Climatic Chart, Prices, Call on or Write

SOUTH COAST LAND COMPANY,

E. M. CLAUSSEN, Sales Manager,
912 Garland Bldg., Los Angeles, Calif.
Phones—Broadway 5395; 14534.

Or Drive Down and See

CHESTER CRAIG, Agent,
Carlsbad, California.

Figs and Grapes on the Same Land

A PLAN for interplanting figs and grapes, novel in its conception and striking in its possibilities for production per acre, has been devised by J. M. Seropian, widely known grape and fig packer, formerly of Fresno, who recently has removed to Los Angeles.

Mr. Seropian, a grower, packer and shipper of fruits for more than 25 years, is developing a large ranch in Riverside County according to his interesting double intercropping plan. The accompanying diagram indicates the method of setting vines and trees.

An acre of land is 208 feet square, and comprises 43,264 square feet. The Mission Grape and Fig Gardens now being developed by Mr. Seropian and associates are planted in ten-acre tracts, 660 feet square. The figs are planted in 18 rows in each direction, which takes up a space 612 feet square, leaving a space of 24 feet on each side of each ten-acre tract.

J. M. Seropian, Who Advocates a Novel Method of Providing the Proverbial "Vine and Fig Tree."

PROVIDES FOR AVENUES

This, with a similar space on the adjoining ten acres, leaves an avenue between the fig trees of 48 feet on all four sides.

The fig trees are planted at a distance of 36x36 feet, making about 33 fig trees to each acre, gross count, or 324 fig trees to each ten-acre tract.

It is possible to plant 48 trees to each acre by planting 30x30 feet, or 69 trees by planting 25x25 feet, but Mr. Seropian believes that placing the trees closer than 36x36 feet makes it impossible for sufficient sunshine to penetrate the foliage for curing the fruit and warming the soil.

"This," he asserts, "explains the fact that border trees in a closely planted grove usually are larger and stronger than those on the inside and produce a proportionately better crop."

"Trees planted 36x36 feet," asserts the veteran packer, "will give practically the same average production throughout the orchard, and consequently the total production should equal that of closely planted trees, and in addition be more desirable as to quality and size of fruit. Furthermore, there is less danger of souring or cracking while the fruit is on the tree."

PLANTING THE VINES

Grape vines are set out on the same land with the figs, 6x12 feet apart, in rows, the first row being 12 feet from the outside row of fig trees and 12 feet from the center of the avenue, which leaves an avenue all around each 10 acres of 24 feet between the two outside rows of vines, or 48 feet between the two outside rows of fig trees.

The next row of vines goes in the same line as the trees, this row having three vines between each two trees in the row, making a distance in all cases of 12 feet between vine and fig tree, thus giving each tree a space of 24 feet square.

The third row of grape vines is planted in a row between two rows of figs, 12 feet away from the figs and 6 feet apart in the row, leaving a distance of 12 feet between the two rows of vines, so that the vines also can get an abundance of sunshine and air.

The 12 foot space in the center can be used for hauling out the fruit or for curing, making it unnecessary to trim the vines or to leave a roadway every few rows, as is frequently the case with closer planting, such as 8x8, 9x9 or 10x10 feet.

When vines are set 8x8 feet apart, there are 680 vines to each acre; when planted 9x9 feet apart, 557 vines, gross count; when planted 10x10 feet, 4[illegible] vines, gross, and when planted 6x12 feet, as in the Seropian plan, 6[illegible] vines, gross, per acre.

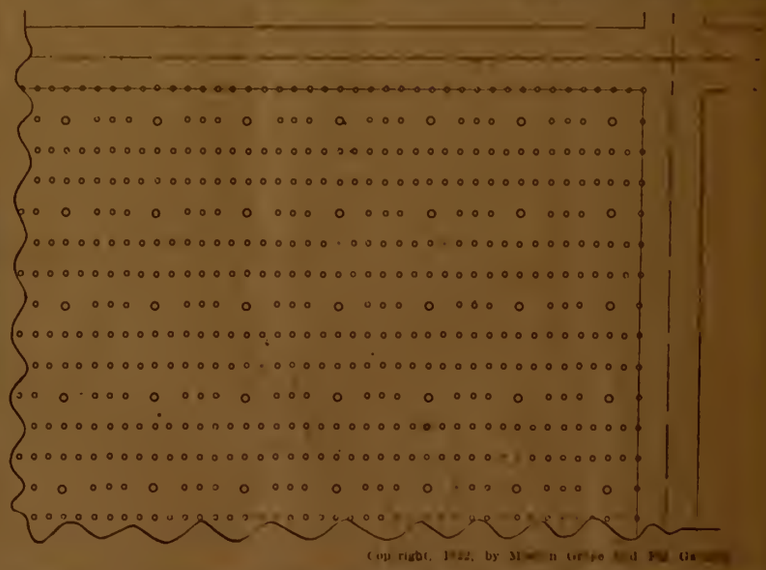


Diagram showing method of planting about one acre of a 10-acre tract. Large circles represent fig trees; small circles, grapevines.

When interset with the fig trees, however, as explained above, there will be 480 grape vines (net) to each acre and 4806 vines (net) to each ten acres.

At first glance it will seem that close planting should give more vines and consequently greater yield, but upon deducting the number of vines necessary to leave out for avenues and driveways, it will be found that the net number of vines per acre will not exceed, possibly will not equal, the number secured by the Seropian plan.

CARRYING OF FRUIT ELIMINATED

The inventor of this method was spent many months in study of the subject before formulating the ultimate plan, points out as an additional advantage the fact that it is [illegible]

sary for the pickers to carry the fruit to the nearest roadway, as is usually done.

"By this method of planting the grower has as many fig trees per acre as he would have with the trees properly planted separately and without any grape vines," Mr. Seroplan points out. "He has also as many grape vines as though his vines were planted properly without the fig trees. Consequently, by this method, it is possible to produce a double crop and income at the one cost of cultivation and with practically no heavier investment than for either crop alone."

It will be seen from the diagram that the entire tract is planted on the six-foot unit plan; that is, everything is in the proportion of six feet, or multiples of six; consequently, rows and avenues are all uniform and straight when viewed from any direction. It is certain this system, therefore, will give a beautiful effect.

The tract now being developed according to the above system is one of the most remarkable in Southern California, in that it is situated upon a high, gently sloping plateau, for many years presumed to be practically arid. Yet investigation has shown that, due to topography of the land, composition of the soil and climatic conditions, moisture is retained to a greater extent than in many valley districts. It is planned, therefore, to grow figs and grapes without irrigation, established vineyards proving that enormous yields of grapes with the finest flavor are produced in this section, a part of the famous Sobrante ranch.

It is the contention of Mr. Seroplan that fruit produced without irrigation usually excels greatly in flavor and quality that grown by artificial application of moisture. Producers are watching with interest the development of this unique project.

Bud Selection

THREE and one-half million buds were used last summer by members of the Nurserymen's Bud Selection Association, selection being made from bearing parent trees under two seasons' observation. Manager Weeks states co-operation is being given by those interested in the fruit industry of the State, and the third year's work is well organized.

Seed of artificially pollenized varieties of fruit will be planted, according to F. W. Anderson, pomologist of the association, in order to find more satisfactory varieties than some of those in present use.

Improvement in the quality of fruits used by canneries may be expected, since the appointment of Frank Dixon by the Canners' League of California to locate desirable strains of canning fruits. The following officers have been elected by the association: William T. Kirkman Jr. of Fresno, president; J. E. Bergtholdt, vice president; Max J. Crow, secretary-treasurer; Charles B. Weeks, field manager.

Board of directors: J. S. Armstrong, Ontario; J. E. Bergtholdt, Newcastle; Max J. Crow, Gilroy; J. H. Elmer, San Jose; H. A. Hyde, Watsonville; W. T. Kirkman Jr., Fresno; Ruehl Wheeler, San Jose.

Handy Lug Box

THE most convenient lug box for orchard use has been a subject for argument on many occasions.

The drawing shown herewith gives the shape, size and dimensions of a tray that has been adopted by a good many of our most successful fruit

growers. The inside dimensions are as follows:

Length—30 inches.
Width at Top—14 inches.
Width at Bottom—9 inches.
Depth—7½ inches.

The sides are seven-eighths of an inch [illegible] grips the same [illegible]. The end grips project up [illegible] (see [illegible]) are set up three-[illegible]

[illegible] the boxes from [illegible] loaded and p[illegible] up empty.

McQUAY-NORRIS
PISTON RINGS
PISTONS
PINS

Is your gas power machinery wasting money that could be saved by installing them?

Every motor—whether it is your automobile, tractor, truck, engine or pump—has three vital units. They are the piston rings, pistons and pins. It's the condition of these three units which determines the motor's power and economy.

If they are worn, full power and economical operation in that motor are impossible.

Wear in these three units many times causes farmers to sacrifice a good car or tractor or engine, when, if they had renewed them, the machine would have given satisfaction for a long time more.

When you realize the load these three units carry, it's easy to understand why they wear. They have to seal the combustion chamber, withstand the force of every explosion and the stopping and starting of the pistons as they shoot up and down their cylinders. It is not strange that they wear and when they do the motor gets noisy and wasteful. It frequently causes sacrifice of a good car or tractor that would have given much longer satisfactory service if these worn parts had been replaced.

Send for our Free Booklet, "To Have and to Hold Power," which explains the whole subject of motor wear and its correction.

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McQUAY-NORRIS MANUFACTURING COMPANY, ST. LOUIS, U. S. A.

Pistons and Pins
McQuay-Norris *Wainwright* Pistons and Pins—gray iron pistons as light in weight as safety permits—specially designed for replacements—available in standard sizes and over-sizes—also in semi-finished form 75-thousandths over-size—pins of special hardened steel, ground to exceptional accuracy.

$1.25 Per ring — LEAK-PROOF — an exclusive two-piece design preventing loss of gas and compression. Gives equal pressure at all points on cylinder walls. For all piston grooves except top, which should have Superoyl. Each ring packed in a parchment container.

$1.00 Per ring — Superoyl—Keeps lubricating oil out of combustion chamber. Collects excess oil on each down stroke of piston and empties on each up stroke, which ordinary grooved rings cannot do. Each ring packed in a parchment container.

50c Per ring — *JIFFY-GRIP*—a one-piece ring. Non-butting joint, which can be fitted closer than ordinary step cut—velvet finish—quick seating. "Seats in a jiffy." To keep them clean and free from rust, each ring is packed in an individual glassine envelope.

Snap Rings—of the highest grade. Raised above the average by McQuay-Norris manufacturing methods. Their use insures all the satisfaction possible for you to get from a plain snap ring. They are packed twelve rings to the carton and rolled in waxed paper.

2306-F

BEST TRACTORS

The Best 60
For heavy duty farming and road building.

The Best 30 Orchard Type
For light road work and contractors.
BEST construction includes anti-friction bearings, inclosed from dirt, drop forged tracks and truck rollers, all gears are heat treated.

We are Distributors for Twin City Tractors—Orchard Type.

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READ

the "Liners" in the "Farmers' Classified Market Place," Page 40.

Many Special Opportunities Described

PAGE 40

A Feast of Bargains

Glass Cutter

That never wears out and always in your home, but you can't guess what it is until I tell you. So simple, you will laugh. I will prove it or refund your money. 50 cents in stamps or money order will tell you.

T. R. McCLURE, Oakland, Calif.

15 Cords a Day

$81.00 2 H-P 4 H-P—Low Priced, F.O.B. the Factory.

Easily sawed by 1 man. Wood selling at $4 a cord would bring owner $60.00 a day.

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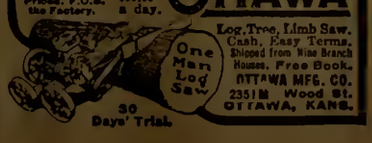

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You haven't read the magazine until you've read the ads.

Read the advertisements for information, diversion, education. Say: "I saw it in ORCHARD and FARM."

Better Potatoes and Bigger Profits

WITH his potatoes selling for $1.50 to $2.00 per cwt., when other growers in the district felt fortunate in getting $1.00, E. J. Whitsett, banker, farmer and community developer of Van Nuys, California, has attracted wide attention because of the unique methods he has inaugurated for handling his crop.

Mr. Whitsett, president of the Bank of Van Nuys and owner of a large acreage of valuable farm land in the San Fernanado Valley, has interested himself for many years in potato problems. As a result of his unusual methods and the established quality of his products, Mr. Whitsett has found a ready market for his spuds at a time when demand was very slow and prices discouraging to the average grower.

For some time during the month of August, a carload a day was leaving the Whitsett ranch on special consignment, a number of large orders, consisting of "Fancy Bakers," going to San Francisco for the high class hotel and restaurant trade.

CARE EXERCISED AT START

To begin at the beginning, Whitsett potatoes are handled with care and forethought from the time of purchase of the seed. Only the best certified White Rose seed is used and this is treated with corrosive sublimate, and planted in ground carefully and scientifically prepared. Seed is selected from hills *both for production and type.*

The fertility of the soil of the Whitsett ranch is maintained by fertilization and rotation. Melilotus Indica is used as a cover crop, the soil being harrowed down to a smooth mulch, and the melilotus seed sown at the rate of 12 to 15 pounds per acre. The seed is harrowed into the ground and two irrigations applied in order to secure a good stand, before the first fall rain. The melilotus is plowed under in February, and a complete commercial fertilizer is applied at planting time, at the rate of about 600 pounds per acre.

POTATOES RAVENOUS FEEDERS

"Potatoes," says Mr. Whitsett, "are as ravenous feeders as hogs. They must have plenty of food and water."

Spuds are grown upon the same land at the Whitsett ranch not more than three years in succession. Alfalfa, which is sold at a good price to neighboring dairymen, is raised as part of the rotation plan, usually standing for five years.

Spring and fall crops of potatoes are raised. During the summer months, it is not unusual to observe plowing, irrigation, harvesting and planting all taking place on the Whitsett ranch at one time.

The yield, as well as the quality of the crop, appears to justify the careful methods of production. Over 200 sacks to the acre is not an unusual return. Of the 100 acres in cultivation on the ranch, 60 acres was devoted to potatoes this year.

The ground is irrigated by means of checks just before plowing and again shortly after planting.

It is in the harvesting and handling of the crop, however, that Mr. Whitsett's methods differ most widely from those commonly practiced. No sacks are used in the field. The pickers employ ordinary 60-pound lug boxes and are paid at the rate of three cents per box.

Before the spuds are picked up, however; in fact, as soon as they are plowed and piled, they are covered with vines to protect them from the sun. An effort is made to get them off the ground and under cover before they have time to become heated. A wagon hauling from the field, works closely behind the pickers and no time is lost in getting the tubers into the shade.

The potatoes are delivered to a large shed with open sides. Here they are piled in long rows and covered with alfalfa hay, where they go through the sweat, which Mr. Whitsett maintains is necessary in order to bring out the best flavor. The hay is selected carefully, only that which is not too dry and which is carrying a large percentage of leaves, being used. Alfalfa is preferred to straw or other covering for the reason that it is believed to prevent entrance of tuber moths.

STORAGE SHED COOLED

In order to maintain the desired temperature, the storage shed is cooled by a novel process. Burlap curtains, made from sacks which have been cut open, partially cover the open sides of the shed and are kept moist by means of fine sprays from small water pipes conducted along the eaves.

The evaporation of the moisture from these sacks and the cooling action of the wind, result in the maintenance of ideal temperature conditions. The temperature can be regulated by controlling the amount of water applied. The principle is the same as that of the so-called "desert cooler."

The roof of the shed consists simply of woven wire netting, covered with hay to provide ventilation.

Large potatoes, removed from the bottom of the piles several days after picking, feel as cool as though they had been in cold storage. A sudden chill, however, is just as detrimental as too much heat, according to Mr. Whitsett. A temperature between 40 and 60 degrees is ideal for potatoes, he asserts.

Adjoining the storage shed is a larger and more permanent building, where the sorting is done. The potatoes are sorted into three grades, as follows.

THREE GRADES SORTED

1—The "Bakers," an extra fancy grade for hotel and special trade, which prior to the tenth of August sold for as high as $2 a cwt. f.o.b. ranch.

2—The second grade, known as "Government Standard No. 1 Fancy." These having commanded a price of $1.50 per cwt. early in the season.

3—The third grade, consisting of "throw-outs," is piled under hay for sorting later in the season when prices are higher and supplies more scarce, and it is expected that most of these will bring a price equal to the high average for the earlier sales.

Bags are hung near the sorting table by means of metal holders and a crew of sorters, paid by the hour at the prevailing rate, (about 40 cents August 1) divide the potatoes and drop them into the sacks, which are sewed up and delivered immediately to motor truck

He Is Making an Aristocrat of the Once Lowly Spud

FORMERLY a coal mine operator in Illinois, E. J. Whitsett came to California eleven years ago, broken in health. Now at the age of 46 he is well and strong and the recognized leader in his community.

E. J. Whitsett

He attributes his recovery to a "working partnership with Nature in the wonderful California climate." With practically no knowledge of agriculture when he came to this State, he has converted his community into one of the most productive intensive farming districts in the West, bringing success not only to himself but also to hundreds of settlers whom he induced to buy land.

He came to California to "rest," but had been here only a few months when he was engaged in a feverish real estate campaign. Soon every tourist received, almost before he stepped from the train, a personal letter from Mr. Whitsett, including an invitation to visit the San Fernando Valley and free transportation for the trip. Mr. Whitsett is credited with being the originator of the excursion method of selling real estate. For some time his method of securing the names of new arrivals was shrouded in mystery.

He has championed many new and original ideas until they overcame, by sheer merit, the scoffing of less enterprising unbelievers. Now he is upsetting precedent in the production of potatoes and, as in the case of poultry, berries and fruit, is showing what can be done by the use of methods founded upon science, understanding of Nature's ways, sound business principles, and common sense.—Editor

The Potatoes Are Sorted Into Three Grades

Paul Whitsett Showing How Tubers Are Covered With Vines in Field, After Being Placed in Lug Boxes.

Above — Showing how potatoes are piled and covered with alfalfa hay for storage. Right—The Whitsetts believe in establishing a trademark and advertising it. New sacks, printed as shown, are used for the better grades.

Potato Storage Shed on the Whitsett Ranch
The potatoes are piled under a rough shed, the roof of which consists of wire netting covered with hay. Burlap is hung along the back and kept moist by means of sprays from a small water pipe along the eaves. Soft, but not green alfalfa hay is used for covering the tubers while they undergo "the sweat."

or railway car as the case may be.

New sacks, each printed with name and trade mark, are used.

IS EXPENSE JUSTIFIED?

"But your expense is so high," protests the investigator.

"This may seem to be the case," replies Mr. Whitsett, "but as a matter of fact we shall soon have our system so standardized that we can bring our cost of harvesting under that of the old method!

'Not only that, but we shall build up confidence and good will that will result in a demand for our trademarked potatoes on which we shall realize more and more each year. In a way, we are building for the future, although we are getting much better prices than many other growers, and if we have gone to any additional expense, we feel it is being returned to us in this one crop."

BOYS IN PARTNERSHIP

The Whitsett ranch is under the supervision of Paul, the 18-year-old son of the banker, who takes the greatest interest in the work. His energetic father has a good many original and resultful ideas, one of the most interesting of which has to do with the training of his boys.

When Paul was but 16 years of age, his father sold him 10 acres of land "on time," and "staked" him for his seed and labor in planting the crop of potatoes.

This was during the war, when prices were soaring and young Whitsett "made a killing," producing over 200 sacks per acre on his entire little farm for which he received seven cents a pound, or more than enough to pay for his land. With the proceeds of his enterprise he set out his ranch to berries and walnuts, and expects before many years to develop valuable property of his own.

Similar success was had by a younger brother, who paid for five acres with one crop of spuds.

SECRETS OF SUCCESS

Briefly, here are the secrets of success in raising high grade potatoes, as set forth by the banker-farmer and his sons:

1—Start with the right kind of soil, preferably a sandy loam with good drainage and sufficient humus to hold the water about the roots of the plants.

2—Increase the fertility and improve the physical characteristics of the soil by the use of cover crops, fertilizer and rotation.

3—Use plenty of water. Keep the foliage of the plants always green and luxuriant, and the yield will take care of itself.

4—Select the seed not only for production but also for type. A hill of potatoes containing seven tubers will give seed which in turn will produce seven tubers. A hill yielding ill-shaped, diseased seed in turn will give ill-shaped, diseased potatoes.

5—Cultivate thoroughly to maintain a mulch which will hold the moisture.

6—Handle the crop in such a manner as to avoid either chilling or overheating.

7—Store the spuds long enough to bring them through the sweat, but in such a manner that the temperature can be regulated.

8—Grade carefully, and establish a reputation with the trade through accuracy of grading and quality of potatoes.

9—Advertise—make your trademark known.

Science Made Simple

By Adam Phule

Article V—The Peach Nut

MY EXPERIMENTS in the production of the remarkable fruit-food known as the peach nut have resulted at last in a triumph which should be made known to the world.

As even the novice in plant popagation knows, the ordinary peach-pit bears striking resemblance to the almond, the two species being, in fact, closely related.

Prof. Phule

It occurred to me that if the pit could be changed to an edible nut, it would be possible to harvest a double crop. Upon eating a peach, the epicure, instead of discarding the stone, would find in its place a delicious almond. And the grower would realize a double revenue from one tree.

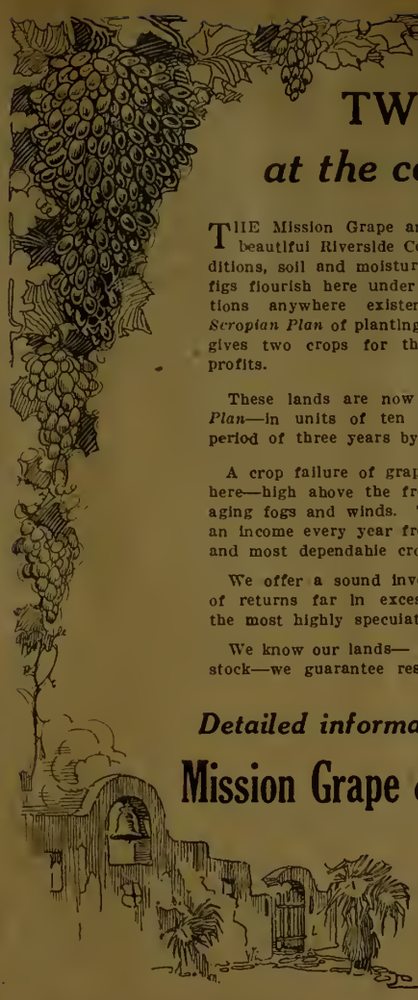
After trying various methods, including budding, grafting and inter-pollination, without satisfactory results, I hit upon the simple plan of cutting open the young peaches on my experimental tree, removing the seed, inserting almond and pasting the halves of the fruit together again.

Then when the fruit had matured, with the almonds inside, I used the almonds from the peaches, (which meanwhile had become a part of the fruit and had been nourished by the peach tree) as seeds from which to grow young trees.

[illegible] I found that these little seedlings grew true to [illegible] much fruit containing the almonds.

[illegible] a simple matter to continue the propagation by [illegible] made valuable to all the people—a triumph [illegible] life.

[illegible] Now if only I could add the juice of [illegible] the dressing!



TWO CROPS
at the cost of one

THE Mission Grape and Fig lands—located in beautiful Riverside County where climatic conditions, soil and moisture are ideal. Grapes and figs flourish here under the most natural conditions anywhere existent in California. The *Seropian Plan* of planting figs interset with grapes gives two crops for the price of one—double profits.

These lands are now being planted—*Seropian Plan*—in units of ten acres—cared for over a period of three years by our experts.

A crop failure of grapes or figs is unheard of here—high above the frost belt—free from damaging fogs and winds. The grower is assured of an income every year from these two best-paying and most dependable crops in California.

We offer a sound investment that assures you of returns far in excess of promises made by the most highly speculative propositions.

We know our lands— we grow our own nursery stock—we guarantee results!

Detailed information on request

Mission Grape & Fig Gardens

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Los Angeles, Calif.

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"Fencing Products Known To The Nation."

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Ask any dealer about my steel fence materials. He will tell you they are the strongest, most durable, most economical materials you can use. They are known throughout America—RED TOP STEEL FENCE POSTS, PACIFIC STIFF-STAY FENCING, MONARCH WRAP-STAY FENCING and SQUARE DEAL GATES.

These materials carry not only the guarantee of reliable well known manufacturers, but they carry also my personal guarantee—any of my many farmer friends will tell you what THAT means. THEY KNOW THAT I LIVE UP TO EVERY CLAIM I MAKE.

Send for my free book, "Fencing Facts for Farmers." It will show you how to find out just what your fence should cost and how you can save money. It is chock full of other valuable information for the farmer. EVERY MAN WHO OWNS A FARM SHOULD HAVE THIS BOOK. Fill in the coupon for this free, interesting illustrated book.

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Germain's Melilotus Indica is best and cheapest cover crop grown. Grows more rapidly and produces more green manure than any other variety.

Insist on "Germain's"—if your dealer can't supply you, write to us.

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Los Angeles, Cal.

American Fruit Growers, Inc., Have Set Up

ELECTRIC FRUIT MARKING MACHINES

In All Their Citrus Packing Houses

Two years' experience has proved that quality fruit, properly identified, commands a premium

The ultimate consumer "wants to be shown." The fixed policy of only identifying fruit of *"quality"* is producing results.

Identified fruit is now established.

It will be well for growers of "Quality" fruit to get in touch with *American Fruit Growers, Inc.*, and secure the advantages of their splendid national distributing facilities, plus the means of permanently identifying their product.

The identification mark follows the fruit to the table.

The Electric Fruit Marking Company has increased its factory to take care of the increased business.

Last season some thirty cars of high grade apples from the Northwest were identified by the electric marking process. This test established beyond all doubt that no injury results from the mechanical marking of apples.

Preparations now are under way to install a number of marking machines in the Northwest, and *"Blue Goose"* apples soon will be as familiar to the consuming public as *"Blue Goose"* oranges and grapefruit.

YOUR GARDEN of FLOWERS

by Helen Temple

PRACTICALLY all garden soils—light, medium or heavy—require fertilization. Heavy soil is lightened if a liberal quantity of well-rotted barnyard manure is spaded under in the fall before the rains. Very light soil will retain the moisture longer after a heavy application of manure, while a medium soil is improved "all around."

Helen Temple

A fertilizer puts into the soil most of the necessary elements for correct plant development that nothing else will furnish. There are many different fertilizers for different soils. The "green" fertilizers, such as cover crops, are not advised for a small flower garden. The various manures and commercial fertilizers can be handled on a small scale much more easily.

A Lesson on Fertilizers

AS an experiment, I used a liberal quantity of barnyard manure in the soil in which a part of my dahlias were planted. The remainder were planted without the use of fertilizer. Both rows of plants were accorded the same treatment. The fertilized row of dahlias grew much more rapidly, their stems were stockier, leaves larger and the flowers almost double the size of the others. They bloomed profusely several weeks ahead of the other row and for a longer period of time. The soil is very heavy, and is termed "rich," but I feel more than gratified with the results of my experiment, as I had often been beguiled into thinking a soil of that type needed no fertilization.

WHEN SOIL BECOMES EXHAUSTED

Heavy crops of flowers year after year will exhaust the soil almost as much as the constant production of field crops. Potassium, nitrogen and phosphorus are consumed in such quantities that we must replace them or the garden will prove disappointing. The plants will be small and spindly, and the flower crop inferior.

Commercial fertilizers should be proportioned to meet the requirements of the soil. Nitrogen makes the plants grow large. Too much of it causes a plant to grow and develop a great deal of foliage, but very few flowers. Potassium is necessary to develop the sturdy stems and leaves, while phosphorus aids in ripening the seeds. The sack containing commercial fertilizer has the formula printed on the outside, thus giving the purchaser a very good idea of its value for his particular soil.

If the nitrogen in the soil seems exhausted, dried blood and sodium nitrate are valuable in replacing it. Wood ashes and potassium sulphate will replace the potassium necessary for the sturdy stems. Phosphorus is added to the soil in the form of ground bone. When the acid phosphate is used to replace phosphorus properties, it must be used several weeks before planting. One can buy the fertilizers to furnish these elements in separate quantities or they may be purchased in combination. I do not advise the use of commercial fertilizers, however, except when it is impossible to use well-rotted manures.

THE NATURAL FERTILIZERS

The majority of our readers are living in the country, where it is possible to obtain the natural fertilizers, which are much more easily used by the novice.

Horse manure is best for the very heavy clay soils, being a heating manure. It should be used before the rains, spading or plowing it under as deep as possible, especially if it has not had time to become well rotted. When horse manure is used on the heavy soils, it breaks up the sticky formation and makes it much easier to "work" the following season.

Cow manure should be used in all light soils. It is, in fact, the best we have for our flower gardens. Being a "cool" manure, it does not heat the soil so much. Sandy soil becomes so warm during the hot days that the young plants will not survive. A liberal application of cow manure, spaded under several weeks before planting out the seedlings, will prevent a large measure of this trouble. All our "cool" crops, such as violets, iris, sweet peas and pansies, should be fertilized with well-rotted cow manure.

Sheep manure is very good as a fertilizer for most of our perennials, and is especially recommended for shrubs. One part of sheep manure to five parts "potting soil" is very good for house plants.

Poultry manure should be used carefully. It is very heating and therefore is much better when spaded under in the heavier soils. Do not throw it about the plants. It may be used as a top dressing, however, when mixed with ashes, compost or leaf mold.

Soot is often employed in the liquid form about our gardens to produce the richer colors of leaves and flowers. Use it in proportions of one part of soot to 25 parts of water. When it is used dry it is worked into the surface of the soil with the hoe or rake.

The term "liquid fertilizers" is applied when the fertilizer is used in liquid form. Quite often commercial fertilizers are applied in this manner. When using the commercial fertilizers follow directions carefully and dilute properly.

Natural fertilizer, when employed in the liquid form, is quite often used at the beginning of the flowering season. It is prepared in a small barrel which can be tightly closed. If it is to be drawn from the bottom through a spigot, several inches of straw should be placed in the barrel before filling with manure and water. The barrel should be half full of barnyard or poultry manure, then filled with water. In a few days it will be ready for use. Keep the barrel tightly closed when not in use. Poultry manure is stronger than the barnyard manures; therefore should

The Effect of Fertilizer

Does it pay to fertilize flowers? Here is a graphic illustration of results obtained. The dahlias at the left were given applications of manure and commercial fertilizer. Those at the right were untreated. The evidence speaks for itself.

be diluted. When applying liquid fertilizer, care should be exercised to keep it away from foliage and stems. Do not use in too large quantities or too often. It is advisable to use it in the water for irrigation not oftener than once in ten days during the blooming season.

September in Our Gardens

BULB planting season again opens in September for all sections of the State. Calla lilies, iris and freesias can be set out. Callas will do well in almost any soil that is fairly rich. In most gardens the common white Callas are being replaced by the yellow variety, with the spotted leaves. Another uncommon Calla lily is the "Monarch of the East," which is very large. This is pink, blending from very dark to white. Iris should be divided and set out this month. There are some of the most beautiful varieties on the market at this time that we who have iris should add to our collections. Those who have none can choose colors and varieties with an eye to future effect.

September is one of the best garden months in California. There is a riot of bloom in the garden, while we must sow and transplant with an eye to future blooms. In the interior, all hardy seedlings should be transplanted and the tender perennials protected before early frosts. Many of them should be taken up and potted before November.

Sweet peas, pansies, candy-tuft, cobea scandens, coreopsis, forget-me-not, calendula, columbine, cosmos, centaurea, lobella, Canterbury bells, moonflower, morning glory, passion flower, mignonette, kudzu vine, violets, Virginia creeper, smilax and stocks may be planted and transplanted in all mild sections. Sweet peas should be sown in the interior for winter blooms and a second crop.

September is an excellent month to plant the window boxes for winter blooms. Trailing fuchia for winter is very good in window boxes in Southern California and in mild interior and coastal regions. In the interior, plant the window boxes with hardy, frost-resisting flowers. A permanent window box of a perennial is best.

Important Dates

Walnut Growers' Field Day, Santa Paula, September 1-2.

State Fair, Sacramento, September 2-10.

Interstate Fair, Spokane, Wash., September 4-9.

Grape Day, Escondido, September 9.

Tehama County Fair, Red Bluff, September 11-17.

Tulare County Fair, Visalia, September 12-19.

Colusa County Fair, Colusa, September 14-17.

Glenn County Fair, Orland, September 18-23.

Washington State Fair, Yakima, September 18-23.

Kings County Fair, Hanford, September 19-23.

Fresno County Fair, Fresno, September 25-30.

Oregon State Fair, Salem, September 25-30.

Shasta County Fair, Anderson, September 28-30.

Ventura County Fair, Ventura, October 4-8.

Kern County Fair, Bakersfield, October 2-7.

Butte County Fair, Oroville, October 2-7.

Pork Day, Turlock, October 4.

Los Angeles County Fair, Pomona, October 17-21.

Southern California Fair, Riverside, October 10-16.

San Francisco Livestock Show, October 18-22.

California Horse-Breeders' Association, Los Angeles, October 18-22.

International Festival of Dates, Indio, October 18-22

Imperial Valley Fair, October 23-28.

Arizona State Fair, Phoenix, October 30-November 3.

Pacific International Livestock Show, Portland, November 5-12.

Second Annual Pacific Slope Dairy Products Show, Fresno, November 13-18

Orange and Olive Festival, Oroville, November 28-December 2.

Fresno National Walnut Exposition, [illegible] December 4-8

Steadfast as the Oak Tree—Time's Judgment on the Colt "Gas Well"

THE oak tree is a living symbol of solidity, sturdiness and durability.

Only after an amazingly long and sturdy existence does it bow to the will of Time.

Having read about the marvelous COLT Lighting and Cooking Plant, you doubtless have wondered how *permanent* it is. How long it will continue to shed its incomparably beautiful white light. How long your wife will have that delightful city convenience of cooking, ironing and heating water by Carbide Gas. How simple will be its operation. How economical. How much attention will be required. How often you will have to call for service, replace parts and units, mend and repair. *In a word, how will the COLT weather the Test of Time.*

Let COLT users speak. They know. They speak from experience—*long* experience. And there are legions of them. Altogether close to a half million farmers and others in rural communities light and cook with this wonderful, non-poisonous Carbide Gas. Here are three letters out of scores that testify to the oak-like durability and sustained perfection of the COLT.

Twenty-four years' Service, practically no repairs

April 28, 1919.

J. B. Colt Co., New York City.

Gentlemen: — Answering your letter of recent date, will say: We have used your Colt Generator for about twenty-four years. It is a 200-light machine and we have 200 lights hanging on it. The Generator has given us the best of service in all this time. The machine has been doing its work at practically no cost to us for repairs of any kind. Very truly yours,

(Signed) P. R. JOHNSON.

There is the test of time.

Another letter from Bradford Norman, 5 West Marlborough Street, Newport, R. I., reads:

"J. B. Colt Co., New York, N. Y.
"Dear Sirs:

"Will you please send me one felt filter for my machine? This machine was installed over twenty years ago and has given perfect satisfaction during that time and the above order is the first expense outside operating (an occasional drum of carbide) that I have had to make."

The test of economy—less than one dollar in twenty years for part replacement!

After Ten Years, Works Like New

Cheapest and Best Farm Light

Shiloh, Ohio, May 22, 1920.

To whom it may concern:—

Ten years ago I had a J. B. Colt lighting system installed in my former home at Lexington, O., for which we used continuously during that time for both lights and cooking, and never cost one penny for repairs, to-day my younger brother lives there and it works as well as the day it was installed.

One year ago I purchased the farm where I now live, and one of the first things I did was to buy another J. B. Colt light plant and have it installed. I have my house and barns both lighted with it and wouldn't do without it for several times the cost, after ten years use I figure it the cheapest and best light for the farmer.

Very Respectfully Yours,
C. K. INK, Shiloh, Ohio

The Final Test

The Government needs for its beacon lights at the entrance of harbors and along rocky ocean shores the most dependable and economical lighting system it can procure. What light is used? CARBIDE LIGHTING! What generators? MOSTLY COLTS!

Simplicity and Economy

Feed the generator Carbide once in a while and run water into the water chamber—that's all you need do. The machine makes the gas automatically. *No continual replacement of parts and power units. No service necessary. Your Colt is a lifetime investment in reliability, simplicity and economy.*

The COLT comes from factory to farm—sold direct to you by COLT solicitors—no distributors or dealers to take a profit. This applies everywhere. A substantial saving here.

Don't Invest in Any System Until You Have Heard the Full Story of COLT

An investment in better light, better cooking, comfort, convenience and happiness indoors is the best investment you can make—*Get the FULL STORY of the COLT before you make that investment.* Send post card to address below today.

PAY IN A YEAR
—
NO MONEY DOWN

J B. COLT COMPANY

30 East 42nd St., New York — 8th and Brannan, San Francisco

COLT TRADE MARK

Oldest and largest manufacturers of Carbide Lighting-and-Cooking Plants in the World

CARBIDE LIGHTING-AND-COOKING PLANTS

ESTABLISHED 1891

WAGNER'S GIANT WINTER RHUBARB

Plant now for February's high-priced market. Should return up to $1000 per acre first year. The California Rhubarb Association could have used the output of 1000 acres this season.

WAGNER'S NURSERY (J. B. Wagner & Son) "Originators of the Giant Winter Strain"
1550 East Villa Street Dept. "O" Pasadena, California.

EXPERIENCE
TEACHES YOU BEST
WE USE THIS METHOD
AUTO YMCA SCHOOL
733 S. Hope Los Angeles

Read the advertisements for information, diversion, education. Say: "I saw it in ORCHARD and FARM."

You haven't read the magazine until you've read the ads.

CONTROL THE CITRUS PESTS

CUT DOWN EXPENSE

By Using Universal Brand Sprays

Red Spider, Citricola and Black Scale can be controlled effectively and economically with **Universal Brand Sprays.** That our products have "made good" consistently is the satisfying experience of hundreds of growers.

Now is the time to use

B. T. S., 15 lbs. TRIUMPH, 1½ to 2½ gals. K-seen GLUE, 1 lb. *(For Citricola and Black Scale)*	Per 200-gal. tank.	B. T. S., 12 lbs. TRIUMPH, 1 gal. K-seen GLUE, 1 lb. *(For Red Spiders)*

(Patented formulas)

You can depend upon this spray to clean your groves, stimulate the trees and give them resistance against climatic conditions.

If you have a special problem regarding your grove, call on Mr. Herbert, our assistant entomologist, at our Los Angeles office.

Insecticide Department

BALFOUR, GUTHRIE & COMPANY

Paul R. Jones, Entomologist

Los Angeles — **H. W. Hellman Bldg.**

San Francisco — **Balfour Bldg.**

Advertisement

MINERALIZED WATER ROUTS CHICKEN LICE

Tablets Dropped Into Drinking Founts Banish Vermin, Make Fowls Grow Faster and Increase Egg Yield

Any poultry raiser can easily rid his flock of lice and mites, make chickens grow faster and increase their egg yield by simply adding minerals to the fowls' drinking water. This does away with all bother, such as dusting, greasing, dipping and spraying. The necessary minerals can now be obtained in convenient tablets, known as Paratabs. Soon after the fowls drink the mineralized water,

all lice and mites leave them. The tablets also act as a tonic conditioner. The health of the fowls quickly improves, they grow faster and the egg yield frequently is doubled. Little chicks that drink freely of the water never will be bothered by mites or lice.

The method is especially recommended for raisers of purebred stock, as there is no risk of soiling the plumage. The tablets are warranted to impart no flavor or odor to the eggs and meat. This remarkable conditioner, egg tonic and lice remedy costs only a trifle and is sold under an absolute guarantee. The tablets are scientifically prepared, perfectly safe and dissolve readily in water.

Any reader of this paper may try them without risk. The laboratories producing Paratabs are so confident of good results that to introduce them to every poultry raiser they offer two big $1 packages for only $1. Send no money, just your name and address—a card will do—and the two $1 packages, enough for 100 gallons of water, will be mailed. Pay the postman $1 and postage on delivery, and if you are not delighted with results in 10 days—if your chickens are not healthier, laying more eggs and entirely free from lice and mites—your money will be promptly refunded. Don't hesitate to accept this trial offer, as you are fully protected by this guarantee.

PARATAB LABORATORIES

Dept. 936, 1100 Coca Cola Bldg., Kansas City, Mo.

You haven't read the magazine until you've read the ads.

The cream of cream separator prosperity goes to De Laval users

There was never greater need than right now for the best separator, one which skims cleanest, has greatest capacity, turns easiest, requires the least care, and produces the most perfect product. In all these respects the De Laval has no equal. Take nothing for granted, simply let it be demonstrated to you. See the local De Laval agent or address the nearest general office.

De Laval Pacific Company

61 Beale Street — San Francisco, Cal.

BLACK LEG

100% PROTECTION FOR LIFE from *one* vaccination with **Cutter's Liquid or Solid Blackleg Aggressin.** Absolutely safe. Cutter's Solid Aggressin Injectors work just like Blackleg Pill Injectors. If Cutter's Aggressin is unobtainable locally, write

The Cutter Laboratory

"The Laboratory that Knows How"

Berkeley (U.S. License) California

N.B.—Old Style Powder and Pill Vaccines still made for those who prefer them.

In answering advertisements, please mention ORCHARD and FARM. This immediately identifies you. It is more satisfactory to subscriber, advertiser and publisher. Say: "I saw it in ORCHARD and FARM."

A Practical Operating Chute

To vaccinate or operate upon domestic animals, especially cattle, usually involves considerable hard work as well as danger to both operator and animal.

This difficulty, however, has been happily overcome by the Sierra Vista Vineyard Co., of Minturn, Cal., a concern controlling some 50,000 acres and owning a fine herd of purebred Hereford cattle.

An operating chute, designed by H. W. Hanneman, is used on this ranch to handle cattle requiring medical attention, and it is said with this chute even the wildest range cow or the heaviest bull may be controlled easily and without danger to animal or operator.

The simple construction of the chute is shown by the accompanying illustrations.

The rope, seen in the front view, extends through a pulley beyond the stanchion. The animal is caught in the usual manner and the end of the rope is passed through the block. With this tackle, one man standing within the protected area behind the panels, can pull the most fractious animal into place. Then the stanchion-board is pushed into vertical position and held with a bolt, passing through holes in the planks, so that the animal is unable to move.

If necessary, the hind legs may be fastened by means of the chain hobbles, shown hanging on the lower panel in the front view.

It is suggested that a little feed be placed in the manger, and that an animal which is excited be left until it has become more quiet.

The table, used to hold instruments and medicines, is 18 inches wide by three feet long, and is supported on 4x4 legs, being well-braced and stoutly constructed so that it will not tip easily.

The stanchion is set at a distance of 8 inches for cows and 12 inches for bulls, when closed. This stanchion is very simple, consisting of one stationary 2x6 upright, and one swinging upright, the latter fastened at the bottom between two 2x6 planks, by means of a long bolt.

The chute is 3 feet wide at the narrow section.

It is the assertion of the owners that this simple device has paid for itself many times over in its saving of inconvenience, time, and "wear and tear" upon men and valuable animals.—Clifford B. Harris.

Independence Via Milky Way

(Continued from Page 8)

by laying a foundation for his herd of Tilly Alcartra stock, conceded to be among the finest in the Holstein world. Genesco Alcartra King Mead and six of the first cows purchased were direct descendants of the sire of the famous Tilly.

It is easy to brag on breeding and to make big claims regarding milk and butterfat production, but buyers who pay fancy prices for dairy stock insist on being shown not only pedigrees but official test records as well. Having accumulated a few surplus bulls and desiring to put down, in black and white, the performance of his cows, where the figures could be utilized in selling future breeding stock, Arp began testing operations, getting up at midnight every day for a year and a half, because cows on test must be milked every six hours. The work then was turned over to S. J. Miller, who has been with Arp five years and who according to his employer is "some dairyman."

RESULTS OF TESTS

Following is the result of the tests which to date have been completed:

	Milk, lbs.	Butter Fat
1. Lucy Freely Pontiac	26,521	8[illegible]
2. Mercedes Alcartra Mead	25,097	7[illegible]
3. Chemacum Korndyke Sena	24,845	810
4. Mercedes Alcartra Freela	21,853	740
5. Queen Lil of McKenzie De Kol	21,637	6[illegible]
6. Mercedes Beauty Alcartra	20,432	70[illegible]
7. Queen Lucy Pontiac	20,297	714
8. Lucy Freela Pontiac 2nd	20,232	64[illegible]
9. Oregon Holly May Korndyke	19,128	72[illegible]
10. Ononis Korndyke Sena	17,676	607
Average	21,772	720

Only four of the above—Nos. 1, 2, 3, 7 and 9—are mature cows, the others having not yet reached the age of maximum production. Since four

pounds of butterfat makes five pounds of butter, the butter production of the 10 cows tested averages 900 pounds.

Two of them—Nos. 1 and 3—produced over 1000 pounds each. No. 2 holds a State record for her age, four years, and won first prize at the State fair last year. No. 6 carried off the blue ribbon for a junior three-year-old.

To date, the testing has cost $1800, but $2400 worth of bulls were sold last year on the strength of it, while the neighbors have all kinds of good bulls which they are unable to dispose of at profitable prices. The best part of testing is that the resultant records can be used to promote future sales of all the relatives and progeny of the cows whose production is officially recorded.

Mr. Arp intends to increase his present herd of 67 cattle, which consists mostly of pure bred Holstein cows, until he has 85 of the latter. By that time it is expected that $6000 or $7000 worth of breeding stock will be sold each year. Arp's ultimate goal is 100 cows each giving 10 tons of milk a year. This does not seem impossible of attainment when it is considered that the first 10 to be tested averaged nearly 11 tons and six of them are not yet mature. Seven more cows are now on official test.

METHODS OF FEEDING

In spite of the fact that this is the hottest, driest summer for years, Arp's cows have shown no falling off in production. This is not altogether due to good breeding, since careful feeding and handling are important factors. The grain ration consists of oats, barley, corn, mill run and soy bean meal, to which in the spring is added cottonseed meal. After the grass dries up, oil meal is substituted, because it is more laxative. One pound of this mixture is fed for each four pounds of milk produced.

Clover hay is fed in the morning, oat silage at noon and oat-and-vetch silage in the evening. Plenty of pure water and shade are provided.

The farm consists of 100 acres. An additional 140 acres is rented. The soil, which had been impoverished by continual cropping, is being built up by manuring and clover farming. A five-year rotation has been adopted, as follows: Clover, three years; oats, one year; corn, one year. The corn is cut for silage in September and clover drilled into the ground.

Arp believes in liberal seeding, using more than a peck of clover seed on each acre, instead of the usual gallon. In case part of the crop is winter killed, plenty is left, he says, when there is a thick stand, which also produces a finer, better quality of hay. The clover yields two and one-half tons of hay the first year and three and one-half the second and third years, in addition to a large amount of excellent pasturage.

CAREFUL CULTURAL METHODS

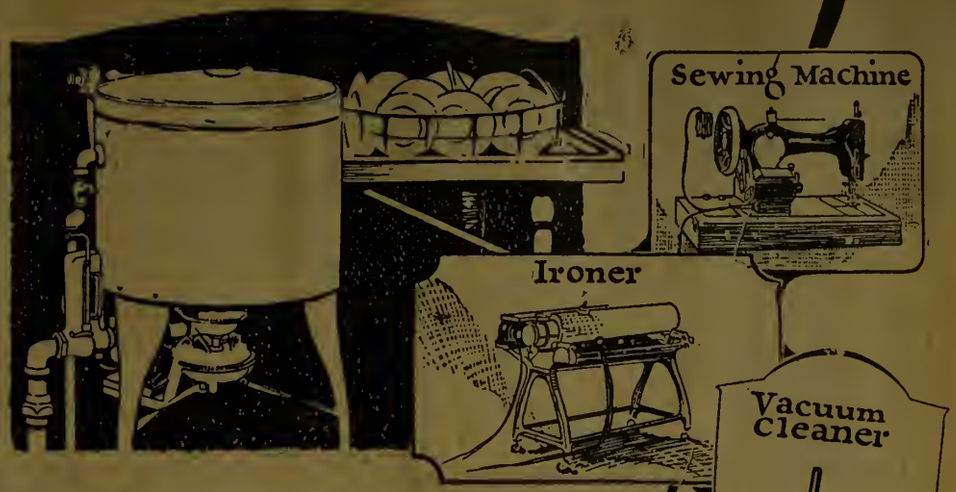
A 50-acre field of corn has not had a drop of rain since it was planted, yet is tasseling out head-high and is still fresh and green. A good seedbed of fertile, humus-filled soil and five cultivations furnish the explanation.

A field of spring oats probably will yield about 50 bushels an acre this dry year. Fall oats could be grown, but the sowing is deferred until spring to give an opportunity to manure the clover sod. Oats make the best silage when cut "in the cream," or between the milk and dough stage. Three silos hold 250 tons of corn, oats and oats-and-vetch silage. These structures are provided with enclosed chutes, built outside the doors, which keep the wind from blowing the feed away when it is thrown out. The main barn holds 100 tons of hay and the horse and calf barns an additional 15 tons.

Four acres of kale and an equal quantity of beets provide succulent

(Continued on Page 35)

I consider this procedure



Electric — Dish Washer!

—another Servant for Country Homes

AFTER THE HEAT and heavy work of summer, you will especially appreciate the labor- and time-saving advantages of an Electric Dish Washer. Besides its convenience and practical utility, an Electric Dish Washer is much cleaner and more sanitary than the old methods of doing dishes and drying with towels which become wet and soiled. It costs no more to operate than the burning of the 100 watt lamp in your front room.

An Electric Ironer, Vacuum Cleaner and Sewing Machine would also help to lighten your work and give you a chance to rest up.

The next time you are in town, CALL ON A DEALER WHO HANDLES THESE ELECTRICAL APPLIANCES. Get full information regarding cost of operation, etc.

PACIFIC GAS AND ELECTRIC COMPANY

PACIFIC GAS AND ELECTRIC COMPANY — COURTEOUS CONTINUOUS SERVICE

P · G · and E ·

"PACIFIC SERVICE"

P-05:9-7 Farm

PACIFIC ELECTRIC RESORT BUREAU

IN THE LITTLE LOG CABIN
Main Lobby, Pacific Electric Station, Sixth and Main Streets, Los Angeles.

FREE information and reservations for all mountain resorts on the

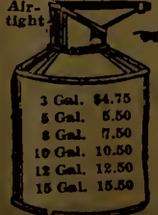
"RIM OF THE WORLD"

in the San Bernardino Mountains, as well as for resorts in the Sierra Madre and San Jacinto Ranges.

ASK FOR NEW FREE BOOKLET
Briefly Descriptive of All Mountain Resorts. No charge or fee of any kind.

LET US HELP YOU PLAN YOUR VACATION

COPPER CANS



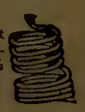
FOR GASOLINE AND HOME USE

Screw Top.
Postage and Insurance 50c Extra. Chicago and West 75c Extra.
Prices on large and special made cans by request.

3 Gal.	$4.75
5 Gal.	5.50
8 Gal.	7.50
10 Gal.	10.50
12 Gal.	12.50
15 Gal.	15.50

These cans furn. with ⅝ or ½ in. unions.

COPPER TUBING



⅝ in. soft copper tubing, 15c; ½ in tubing, 25c per foot.

Deposit required on All C. O. D. Orders.
Write for Free Catalogue.

NATIONAL CAN CO.
1826-CA Ridge Avenue
PHILADELPHIA, PA.

Are your crops looking yellow and growing poorly? They may have indigestion for lack of

Nitrate of Soda

The difference between fertilizing with Nitrate Nitrogen and other forms is that of expecting a baby to thrive on raw flour when it should have milk. NITRATE OF SODA furnishes Nitrogen immediately available for plant food: other forms do not. Write for my FREE BULLETIN, "Common Sense About Nitrogen."

Dr. William S. Myers, Director
25 Madison Avenue New York

How much Rain do your Shingles absorb?

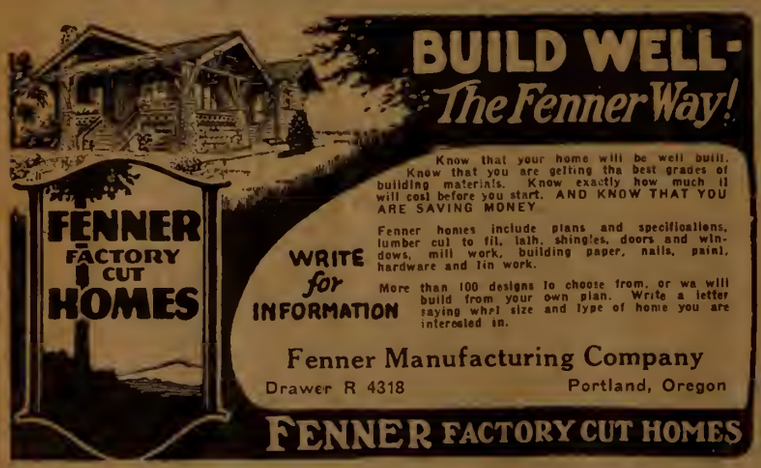
Shingles that become easily rain-soaked are poor roof protection. Damp, unhealthful farm houses and buildings are the result. And besides, the rain-soaked shingles warp and crack when the sun comes out.

Shingle roofs, to give you the excellent protective service of which they are capable, should receive preservative treatment. ORONITE SHINGLE OIL not only helps keep out moisture, but penetrates the wood fibre sufficiently to retard evaporation of natural oils — a source of life and strength to shingles. A tight, well-laid roof will give full protection when treated with ORONITE SHINGLE OIL.

If you want to mix it with colors, our nearest agent will supply you with formulas. ORONITE SHINGLE OIL is easily applied to roofs or side shingled walls.

STANDARD OIL COMPANY
(California)

ORONITE SHINGLE OIL



Read the advertisements for information, diversion, education.
Say: "I saw it in ORCHARD and FARM."

Efficient Stable Ventilation

WHEN milch cows could be bought for twenty or thirty dollars, they were permitted to hunt their own feed and bed on the hillsides. These natural accommodations also provided ventilation.

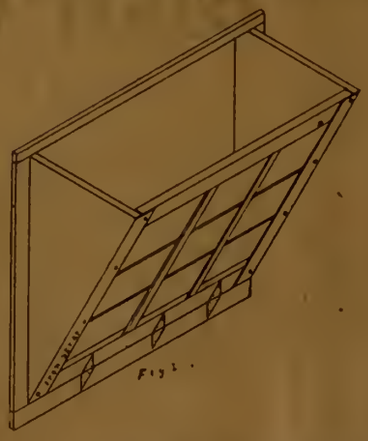
Now that cows cost ten or twenty times the old prices, they are housed in drafty stables and fed high-priced rations.

But scientific ventilation is attracting attention in California as well as in less favored sections of the country. It does not pay to stand a valuable cow where the wind may blow against her. At the same time, pure air in a stable is one of the most important accessories.

Fig. 1 shows how fresh air may be admitted through a wooden flue built into the side of the stable. On the opposite side is another flue that takes the foul air from near the floor and sends it out above the roof

WINDOW VENTILATOR

Fig. 2 is a window ventilator that shoots the air up over the backs of the cows. The amount of air may be regulated by using wooden pins to hold the sash in any desired position.



The metal wings at the sides prevent the air from "spilling out" at the sides. At the same time, these side pieces form a safety box to protect the glass from accidents.

This ventilator window should be placed about three feet six inches or four feet up from the floor to be out of the way of both the cows and the attendants.

Fig. 3 is an automatic ventilator that opens and shuts with the changes in the direction of the wind. A wooden cupola is erected on the peak of the stable roof. It should be five or six feet square, according to the size of the barn, and the height should be a third greater than the width, for appearance and efficiency.

HINGED DOORS

Window sash or wooden doors in each of the four sides are hung with heavy hinges from the top and so fitted that they will swing outward easily at the bottom.

These hinged windows are connected across in pairs by half-inch iron rods, as shown by the drawing.

When the wind blows the windward windows are pushed shut and the leeward windows open. During a calm all four windows remain open a few inches.

This ventilating device will work in a two-story building by adding a ventilating pipe as shown by the drawing. This pipe reaches down through the ceiling of the first story.—Herbert A. Shearer.

Old Sheep Ranch Has Rich Deposits

WHEN principalities of land were in circulation at what now may be considered bargain prices in California, 'way back in the "seventies," Louis F. Moulton, descendant from one of Massachusetts' most historic families, bought 23,000 acres, known as the Rancho Niguel, and began raising sheep on the lordly ranges surrounding what is now El Toro Station, Orange County.

Forbidding hills, encrusted with outcroppings of limestone, long lay baking in the sun on Rancho Niguel. The light overburden made scant feed for the sheep, and it was not until a few days ago, when Fred L. Sexton, Orange County pioneer, looking over this deposit, found that it was so nearly pure calcium carbonate that it had possibilities of placing many thousands of California's depleted acreages abreast of their greatest productivity again.

The deposit is plainly traceable to marine life, oyster and other shells and remains of large bones having been found in great quantity and almost perfect preservation. Moreover, it is stated that literally hundreds of thousands of tons of this soil-awakening material, almost free from even a trace of foreign matter, are readily obtainable for immediate use, and a large crushing plant, bunkers for loading and other necessary material are nearly installed with the probability that deliveries can be made within a fortnight.

Anaheim people of prominence are behind the new Orange County enterprise, and chemists of the highest authority, who have examined samples from each hillside deposit, of which there are many on the Rancho, state that here lies an inexhaustible and cheaply obtainable supply of rich fertilizer. Old orchards and inferior beet lands have in many cases derived great benefit from application of available calcium.

Marl, chalk and other calcareous materials have been hauled great distances, ever since the dawn of the agricultural era, say these chemists, to replenish worn-out soils, the measure of their value depending upon availability for immediate assimilation. Calcium, they claim, is to the earth what the spark is to the gas motor, and on that assumption they hail the present discovery, so available and so near many thousands of the most valuable acres of the earth's soil, a veritable boon to the Southern California orchardist and farmer, and a solution of his ever-present problem of soil-deterioration.—Malcolm Frazier.

IN THE "GOOD OLD DAYS"

IN AN article published in "The American Museum" in 1787, an old farmer wrote: "My farm gave me and my whole family a good living on the produce of it and left me one year with another 150 silver dollars, for I never spent more than 10 dollars a year, which was for salt, nails and the like. Nothing to eat, drink or wear was bought, as my farm provided all."

Independence Via the Milky Way

(Continued from Page 33)

feed during the fall and winter months. Mangels are grown in preference to sugar beets or carrots, because they yield better and are more easily dug. They are stored in a double-walled shed and fed whole, which not only saves work but also obviates the danger of choking cows.

Kale is chopped with a feed cutter and fed from the middle of September until New Year, after which beets are given until grass comes in the spring. The kale is cut in the field with an axe and loaded onto wagons with a pitchfork. A yield of 30 tons an acre has been secured by irrigation. The yield of beets has been increased from eight tons to 35 tons by artificial watering.

Irrigation is accomplished by means of a tractor, operating a six-inch centrifugal pump, which throws 20 barrels of water a minute from a small creek. The tractor also is used for cutting kale and ensilage, delivering 16 horse power at the pulley or half as much at the bar.

THE CATTLE SHED

Cold rains are characteristic of Oregon winters. Therefore, instead of forcing his cows to shiver outside in the rain or remain tied up in the dairy barn on cement floors, Arp has provided a shed, 50 by 120 feet, which furnishes protection from the sun in summer and from the rain during the winter season. A narrow mow in the center is filled with straw, which is spread over the dirt floor while the cows are in the barn being milked. To see the cows afterwards stretch out on that clean, soft straw gives the owner pleasure which a hard-hearted apple tree could never impart—to him, at least.

Each spring 300 loads of the finest kind of manure are hauled out of the cowshed and spread over the fields, together with the accumulation from the dairy barn. The latter is removed by means of a litter carrier and part of it hauled out in the autumn.

A seven horse power gas engine generates electricity to light all the farm buildings. It also pumps water. A steam engine station nearby furnishes hot water and steam for washing and sterilizing milk bottles and other utensils and warms drinking water for the stock in winter. It can also be used to run the pump and electric plant when the gas engine is out of commission.

Electricity will supplant the gas engine within a few months, as a power line is to be extended from Santa Clara, a mile and a half distant, to the Arp farm this fall. The creek is to be dammed, forming a reservoir three-fourths of a mile long, 40 feet wide and seven feet deep, providing an ample supply of water for irrigation and fire protection. An electric motor and centrifugal pump are to be installed on the bank of the reservoir and pipes laid to the buildings, for instant use in case of fire.

SEVEN MEN EMPLOYED

Seven men are employed at salaries ranging from $75 to $110 a month and are furnished house, garden and milk. Hans, who is now 19, quit high school at the end of his freshman year, because he preferred dairy work. He used to raise the calves, but now makes a "full hand" at milking.

Millie is now 17 and does a good share of the office work. Hans has two cows and three heifers. He is thoroughly posted on the dairy business, especially the breeding of pure bred Holsteins. During a visit to the International Livestock Exposition at Portland last year he never left the judging ring for two days, so great was his interest. He expects to spend the next three months in Minnesota and Wisconsin visiting noted herds of Holsteins.

"We need more dairies here in the Willamette Valley," says Mr. Arp. "Too many people come here with the mistaken notion that they can plant an orchard and within a few years retire and take things easy. There is no surer or better way to make money than by milk and butter production. This kind of farming not only yields a substantial profit but also enriches the land.

"To double the value of the farm land in this section, and make is support more people, let us supplant wheat and oats with the wealth-creating combination of cattle, corn and clover."

Pacific Slope Dairy Products Show

PLANS for one of the greatest dairy shows ever held in the West now are well under way, with the support of the California Dairy Council, dairy supply men, newspaper men, and the College of Agriculture. Every branch of the industry will be called upon to give its support.

Fresno has been selected as the place for holding the show, and because of its location near the center of population in the state it is believed that it is the logical place for this year's exhibition. Fresno is a "convention city," and the Chamber of Commerce has offered the use of their large city auditorium.

The butter manufacturers expect to have a moving exhibit of the modern process of manufacturing butter; the milk distributors expect to show the complete process of milk handling, from the dairy farm to the package for city delivery; the ice cream manufacturers will demonstrate modern methods of manufacturing ice cream, and the cheese industry will be expected to show the complete process of cheese manufacture.

The Dairy Industry Division of the University of California has started plans for showing the progress of dairying in the past half century. Arrangements already have been made for collecting a large supply of equipment which was used on dairy farms in California 50 years ago. Every dairyman in the state will be interested in this exhibit.

The machinery interests already have agreed to fill the exhibit space with equipment of every description that is used by the dairy industry of this country. The milk powder manufacturers, condensed milk manufacturers, milk sugar manufacturers, and all other dairy institutions will be represented.

The California Dairy Council has accepted the responsibility of putting on a "Dairy Week' at Fresno during this show. The various features will be of interest to all dairymen. Special literary and musical programs will be arranged on different days.

The dairy producers and manufacturers of the state should set aside the dates of November 13 to 18 and offer every aid in support of the industry.

—C. L. Roadhouse, Manager.

What to Expect of Paint

PAINT should serve you—prevent depreciation, save repairs, enhance values—for a long period of years.

It should be easy to apply, allowing a minimum labor cost. It should have excellent covering capacity.

Only the best paints can serve in this way. We have been making best paints for 73 years—to meet the weather conditions in the West.

Fuller's House Paints serve five or more years longer than "cheap" paints. They spread easily. One gallon will cover approximately 300 square feet, two coats, depending upon the condition of the surface.

They contain only the finest materials. We use PIONEER WHITE LEAD, for example. It is super-purified and ground so fine that it will pass through a silken screen which has 30,000 meshes to the square inch. All other materials—pure linseed oil, pure zinc and pure colors—are of the same high quality—the quality which is essential to the making of best paints.

House Paint: Fuller's Pure Prepared Paint, Phoenix Pure Paint, for painting houses. The purest, best protective and most durable paint manufactured —32 colors.

Barn and Roof Paint: A protective coating for barns, roofs, fences. Dries with a good gloss and wears. Economical in cost and dependable in quality —6 colors.

Floor Paint: Fuller's Rubber Cement Floor Paint—a sanitary, waterproof and durable paint for floors of kitchens, closets, etc. Attractive in color and gloss. Dries hard over night—12 colors.

Implement Paints: Fuller's Pacific Wagon Paint, adapted for repainting agricultural implements, farm wagons, farm machinery, wind mills. A glossy, durable finish—7 colors.

Also makers of Fullerwear, the all-purpose Varnish, Silkenwhite Enamel, Fifteen-for-Floors Varnish, Decoret, Washable Wall Finish, Auto Enamel, Fuller's Hot Water Wall Finish (kalsomine), Porch and Step Paint, Silo Paint, Milk Can Enamel, PIONEER WHITE LEAD, Tractor Paint, and Fuller's Oil Stains.

Advice on Painting FREE

If you want to do your own work and get the best results, ask our Specification Department for *free advice*.

We'll tell you how to treat old paint, how many coats to use, what kind of brush, etc.

Use Fuller Service as well as Fuller Paints and Varnishes to ensure good work.

Fuller's SPECIFICATION Farm Paints

House Paint - Barn & Roof Paint
Wagon Paint - Rubber Cement Floor Paint
Pioneer Shingle Stain

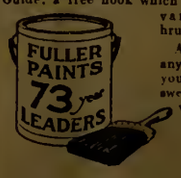
Manufactured by W. P. Fuller & Co., Dept. M-12, San Francisco

Pioneer Manufacturers of Paints, Varnishes, Enamels, Stains and PIONEER WHITE LEAD for 73 years. Branches in 19 cities in the West. Established 1849. Dealers Everywhere.

Free Book—Send Coupon

Send coupon for Fuller's "Home Service" Paint Guide, a free book which tells you how to paint and varnish home things, what brushes to use, etc.

Ask our Service Department any question about paint which you would like to have answered—complete detailed advice is given free.



W. P. Fuller & Co.
Dept. M-12, San Francisco.

Please send me without charge a copy of your "Home Service" Paint Guide.

Name .....

Address .....

City ..... State .....

ISABEL SINCLAIR'S PAGE

For the Woman in the Home

Mistaken Bravery

Dear Friends:

I have just been visiting Mrs. Greene, a lovely woman who is best known for her undying devotion to her home and family, and her exquisite housekeeping. I have heard mutual friends refer to her as "a brave little woman" because she seldom gives up in spite of ill health or discouraging circumstances. However, this time I found her in bed under the doctor's care. She told me she thought she had learned her lesson at last. As a warning I want to tell you what she said.

"I am paying the penalty of my own determination," confessed Mrs. Greene. "My theory was that when one gives up to illness it is likely to get the better of one, therefore, I determined to keep going, in the belief that I could work off and overcome my severe cold. My husband, on the other hand, insisted that it would be better to rest and relax for a day or two, even going to bed, in order to give nature a chance to cure the cold. Now, he could say, 'I told you so' if he were that kind, but he isn't. However, I must admit he was right.

"My new theory is that nature and right thinking will effect a cure if given a chance, but that mental and physical relaxation are necessary. If anyone tells me again it is better to keep going to overcome illness by sheer force of will power, I shall tell them there is nothing to it."

Isn't Mrs. Greene, after all, right? How unwise to court serious illness by trifling with a slight indisposition. Many a "flu" victim died through not taking care of himself; many relapses occurred through refusal of the patient to stay in bed and rest until nature could restore lost strength and energy.

On the other hand, it is equally unwise to become alarmed at the first symptom of illness, go to bed, call a doctor, take three or four different kinds of "dope" and generally work up a state of great agitation..

A little common sense mixed with rest, light eating, and right thinking, usually will stop incipient illness before it is fairly started. Am I right?

Sincerely yours,

Isabel Sinclair

A Wonderful Cake

WE who have always used cake chocolate when cooking, will be interested in knowing the ground chocolate can be used with equally as good results. The following recipe has been tried and proved by Mrs. Belle DeGraf, famous domestic science authority:

ONE EGG DEVIL CAKE—ALL CHOCOLATE

FIRST PART:

One-third cup ground chocolate; 1-3 cup milk.

SECOND PART:

One-third cup shortening, 1 cup sugar, 1 egg, 2-3 cup milk, 2 cups sifted flour, 3 teaspoons baking powder, 1 teaspoon vanilla, ½ teaspoon cinnamon.

Cook chocolate and milk over a low fire until somewhat thickened. Cream shortening until waxy; gradually add ½ cup sugar, beating until mixture is creamy. Beat egg until light and then add remaining ½ cup sugar. Beat well; then combine mixtures.

Sift measured flour, baking powder and cinnamon. Add alternately with milk, beating until batter is smooth. Add vanilla and cooled chocolate mixture. Mix well. Pour into well greased layer cake pans and bake about 15 minutes in a moderately hot oven. Or bake in a shallow loaf cake pan about 40 minutes. Put layers together with chocolate filling, and ice with frosting. This mixture may be baked in tin muffin pans and iced when cold with chocolate icing.

How to Remove Stains

[These helpful hints are published by courtesy of the American Washing Machine Manufacturers' Association and the California Electrical Co-operative Campaign.]

REMOVE all stains before washing, for most stains are set in the wash. Stains make a garment look old, unsightly and untidy.

Treat stains promptly. Consider what made the stain and the kind of material stained. The principle of removing stains is similar to that in removing all sorts of dirt—finding some substance that will affect the stain mechanically or will absorb or dissolve it.

Treatment depends upon the color, weight and material of the garment. Some stains will be removed by water alone, cold or hot, while others resist such simple means and must be treated with special stain removers. These stain removers may absorb the stain, as grease or freshly spilled liquids, or dissolve it, as stains of sugar, grease, etc., or bleach the fibers of the cloth. The bleaches are to be used only as a last resort, since they are apt to weaken the fiber and probably will destroy color.

NOTE—Strong acids destroy the vegetable fibers, cotton and linen; dilute acids may be used. Wool and silk, the animal fibers, are injured by strong alkalis, such as lyes, washing powders, etc. Mild alkalis, such as borax and dilute ammonia, can be used with care. Both acids and alkalis must be thoroughly rinsed out of the garment.

Cover grease spots with powdered absorber such as talcum, French chalk, fuller's earth, starch and bolted meals; let stand several hours, then brush carefully, repeating if needed. A second method is to lay the material on white blotting or unglazed paper and cover with powder or more paper, applying a warm iron. Repeat, using fresh powder or paper, until the stain is entirely removed. Cover dry blood and ink stains with starch paste; when the paste dries and discolors, brush off, and repeat until the stain disappears. Cover freshly spilled liquids with powder, meal, or bits of blotting paper to prevent the liquid from spreading and sinking into the material.

TO USE SOLVENTS

Water—Soak washable goods in cold water and wash with cold or tepid water and white soap. Use hot water in the same way or by stretching the stained goods over a bowl and pouring boiling water from a height.

NOTE—Hot water sets some stains, such as blood, meat juice, milk and egg. Place non-washable materials over a pad of white cloth or absorbent paper. Sponge, using very little water at a time. Change the pad as it becomes soiled or wet. Rub gently until dry. Caution—Water spots some materials; experiment with a sample.

Other solvents, such as alcohol, benzine, carbon tetrachloride, chloroform, ether, gasoline and turpentine, can be used on materials that water will spot. Place the stained goods over a pad of cloth, apply the solvent, and work from the edge of the stain to the center. Change the under pad frequently.

Remember, a number of short applications of dilute bleaches are safer than long applications of strong bleaches. Sunlight, lemon juice, sour milk, borax, oxalic acid, hydrogen peroxide, potassium permanganate or Javelle water are commonly used bleaches.

Place the stain, such as fruit, ink or iron, over a bowl of hot water and apply the bleaching agent a drop at a time. When the stain changes color, dip into the water. Rinse with ammonia and then clear water. Caution—Use Javelle water only on white cotton and linen. If the potassium permanganate leaves a pink stain, remove it with dilute oxalic acid.

PREPARING STAIN REMOVERS

Javelle Water—One-half pound chloride of lime dissolved in two quarts of cold water. Dissolve one pound of washing soda in one quart of boiling water. Pour the clear liquid from the chloride of lime into a bottle and mix with the solution of washing soda. Cork and keep in a dark place.

Oxalic Acid (POISON)—Dissolve one ounce of the acid crystals in three-quarters of a cup of warm water.

Potassium Permanganate—Dissolve one teaspoonful crystals in one pint water.

Hydrogen Peroxide—Add a few drops of ammonia just before using, to make it work more quickly.

Blood and Meat Juice—(1) Rub with naphtha soap, soak in warm water, and wash. (2) A paste of raw starch mixed with cold water can be applied to stains on flannel and blankets and heavy goods. Repeat if necessary.

Bluing—Boil the stained material for about twenty minutes, adding vinegar if a bleach is necessary.

Chocolate, Cocoa and Coffee—Use boiling water, bleaching if necessary with potassium permanganate or Javelle water. If cream has been added to coffee, first apply a grease solvent.

Egg—Wash in cold water, then warm water and soap.

Fruit and Fruit Juices—Use boiling water, applying bleach if necessary. Repeat the application of boiling water, poured from a height.

Grass—(1) Wash with cold water and soap; bleach if necessary. (2) Use grain or wood alcohol or ether, applying by sponging.

For colored fabrics, apply molasses or paste of soap and cooking soda, and let stand over night.

Grease and Oils—Use absorbents as listed above in materials liable to be injured by water. Use carbon tetrachloride, ether or benzine on delicate fabrics. Use warm water and soap on wash goods.

Indelible Pencil—(1) Soak in alcohol and wash with water and soap. (2) Wash with soap and water and apply potassium permanganate.

Ink—Soak fresh stains in sour milk or buttermilk, or apply an absorbent.

Soak stain with oxalic acid solution, rinse in water to which few drops of ammonia are added.

Iodine—(1) Soak or sponge with ammonia. (2) Prepare starch as for laundry purposes, immerse stained material, and boil. (3) Wash with alcohol.

Iron—(1) Cover stain with salt, moisten with lemon juice, hang in sunlight. (2) Boil stain in solution of cream of tartar water made in proportion of four teaspoons cream of tartar to one pint of water. (3) Apply undiluted oxalic acid or dilute hydrochloric acid. Rinse thoroughly in hot water to which has been added borax or a few drops of ammonia.

Kerosene—Use soap and warm water.

Machine Oil—(1) Soap and cold water. (2) Sponge with turpentine.

Medicine—Soak in alcohol or dilute oxalic acid, or apply boiling water.

Mildew—(1) If fresh, wash with soap and cold water. (2) Soak in sour milk, place in sun without rinsing. (3) Bleach old stain with Javelle or potassium permanganate.

Mud—(1) Allow to dry and brush. (2) Sponge with alcohol.

Paint and Varnishes—(1) Sponge with turpentine. (2) Boil white cottons and linens in solution of washing soda (three teaspoons to each gallon of water). (3) Use carbon tetrachloride on delicate goods.

Perspiration—Use soap and warm water; bleach. Remove odor with chloroform.

Pitch, Rosin, Automobile and Wagon Grease—(1) Rub with fat and wash (2) Sponge with benzine, gasoline or carbon tetrachloride.

Scorch—Wet and bleach in sunshine.

Shoe Polish—Black: Rub with grease, then make thick suds and wash. Use turpentine on wools and silks. Brown: Soap and water; sponge wool with alcohol, then wash in soap and water.

Soot—Brush lightly, then use absorbent powders, such as fuller's earth or corn starch.

Stove Polish—(1) Soap and cold water. (2) Immerse in gasoline or chloroform.

Tobacco—(1) Soap and water, followed by lemon juice bleach. (2) Use Javelle water on white cottons and linens. (3) Sponge wool with alcohol.

Tomato—(1) Bleach with sunlight and lemon juice. (2) Sponge stains with alcohol. (3) Bleach with Javelle water.

Vaseline—Treat as grease. Soak old stains in turpentine.

Water—Dampen entire garment, press while damp. Shake in steam, and press.

Wax or Paraffin—Treat as grease, using absorbents. Bleach.

WRITE FOR THESE BULLETINS

Removal of Stains from Clothing and Other Textiles—Farmers' Bulletin 861 Division of Publications, U. S. Dept. of Agriculture, Washington.

Who Washes Your Clothes? American Washing Machine Manufacturers' Association, 10 South La Salle Street, Chicago.

OME, left behind, is dearer on returning—
(God made the night that the day might seem more fair);
Love, though denied, is sweeter for the yearning—
Rest, weary heart, and find surcease in thy prayer!
—J. F. D.

Little Helps

It is a simple matter to darn worn lace curtains on the sewing machine. Lay a newspaper under the holes and stitch back and forth until the hole is covered. Then tear off the paper.

To keep things hot on a gas range and to conserve gasoline or oil in a stove, secure a piece of sheet iron to cover all burners. Sufficient heat will be diffused to cook the whole dinner and the receptacle needing the most heat may be placed directly over the fire.

To prevent meringue sticking to knife or pulling off pie when cutting it, add pinch of cream of tartar to whites of eggs when beating.

Small round loaves of bread for use in making dainty sandwiches may be baked in one pound baking powder cans. Butter the inside of the can and fill only half full of dough.

Cooking will be much more rapid in the inner vessel of a double boiler if salt is added, a half cupful to two quarts of water, to the water in the container.

Butter, added to rolled oats when cooking, will give an excellent flavor and prevent boiling over.

Fill the garbage pail a quarter full of ashes and stir with a stick, repeating two or three times, and the pail will be not only clean, but also odorless.

Dampness may be removed and odors destroyed in cellars or pantries by the use of a bowl of quicklime set where it will be out of the way.

Note—Compare these patterns, as to price and style, with those obtainable elsewhere!

PRETTY COSTUMES
Chosen by Isabel Sinclair

These costumes are simple and can be made readily by the home dress maker from the instructions provided. Send 15 cents in silver or stamps for each pattern desired. Address Pattern Department, Orchard and Farm, 1111 South Broadway, Los Angeles. Give full name and address.

4053—Misses' Dress

Cut in 3 sizes: 16, 18 and 20 years. An 18-year size requires 5¾ yards of 32-inch material. If collars and puffs are made of contrasting material, ⅞ yard of 40-inch material will be required. The width of the skirt at the foot is 2⅝ yards. Price 15 cents.

4040-4048—Lady's Costume

Waist 4040 cut in 6 sizes: 34, 36, 38, 40, 42 and 44 inches bust measure. Skirt 4048 cut in 6 sizes: 25, 27, 29, 31, 33 and 35 inches waist measure. To make this dress for a medium size will require 9¼ yards of 32-inch material. The width at the lower edge is about 2¼ yards.

Two separate patterns, 15c for each pattern.

4052—Lady's Dress

Cut in 7 sizes 36, 38, 40, 42, 44, 46 and 48 inches bust measure. A 38-inch size requires 5 yards of 40-inch material. The width at the foot with plaits extended is a little more than two yards. Price 15 cents.

3848—Lady's House Dress

Cut in 7 sizes: 34, 36, 38, 40, 42, 44 and 46 inches bust measure. A 38-inch size requires 5 yards of 36-inch material. The width of the skirt at the foot is about 2 yards. Price 15 cents.

4055—Junior Dress

Cut in 3 sizes: 12, 14 and 16 years. A 14-year size requires 4 yards of 32-inch material. The width of the skirt at the foot is 2 yards. Price 15 cents.

4060—Girl's Dress

Cut in 4 sizes: 4, 6, 8 and 10 years. A 6-year size requires 3¼ yards of 32-inch material. Price 15 cents.

[illegible]—Child's Play Suit

Cut in 4 sizes: 4, 6 and 8 years. A 6-year size requires [illegible] yards of 32-inch material. The trousers requires ⅝ yard of 36 inches wide.

3326—Child's Rompers

Cut in 5 sizes: 1, 2, 3, 4 and 5 years. A 4-year size will require 3¾ yards of 27-inch material. Price 15 cents.

4068—Lady's Apron

Cut in 4 sizes: Small, 34-36; medium, 38-40; large, 42-44, and extra large, 46-48 inches bust measure. A medium size requires 4½ yards of 27-inch material. Price 15 cents.

CATALOG NOTICE

Send 15 cents in silver or stamps for our up-to-date fall and winter, 1922, catalog, containing over 500 designs of ladies' misses' and children's patterns, a concise and comprehensive article on dressmaking; also "Some Points for the Needle," illustrating 20 of the various simple stitches. All valuable hints to the home dressmaker.

Use Coupons in Ordering Patterns

Herewith find.....cents, for which send me the following patterns:

Pattern No..... Size.....

Pattern No..... Size.....

Pattern No..... Size.....

Be sure to give number and size. Send orders for patterns to ORCHARD and FARM, 1111 South Broadway, Los Angeles. Be sure to sign your name and address below.

Name .....

Address .....

.....

(Write numbers of additional patterns below)

2400 telephone wires in a cable little larger than a man's wrist.

Science keeps down costs

When the Bell System installed its first successful telephone cable, fifty wires was the largest number that could be operated in a single cable without "cross-talk" and other interference. Today it would require 48 cables of the original type to accommodate the number of wires often operated in one cable.

Without this improvement in cable, the construction of new underground and aerial lines would have cost the Bell System upwards of a hundred million dollars more than has actually been spent. In addition, the cost of maintenance would have been greater by eighteen million dollars a year. These economies in the Bell System mean a saving in telephone rates to each individual subscriber.

In all branches of telephone practice science has similarly contributed to economy. Even in such a comparatively small item as switchboard cords, improvements have reduced the cost of renewal by four million dollars a year.

Every new telephone added to the Bell System increases the usefulness of *all* telephones, but this multiplication tends likewise to increase the complications and the expense of service. The scientists of the Bell System, to offset this tendency, are constantly called upon to develop new devices which simplify complications and keep down costs.

By virtue of a united system the benefits of these improvements are shared by all subscribers—and the nation is provided with the best and cheapest telephone service in the world.

"BELL SYSTEM"

AMERICAN TELEPHONE AND TELEGRAPH COMPANY
AND ASSOCIATED COMPANIES

One Policy, One System, Universal Service, and all directed toward Better Service

KODAK FINISHING

Films—All sizes up to and including 4x5, $.10 a roll for 6 exp.; $.15, 10 exp.

Film Packs—All sizes up to and including 2½x4½, $.25 a pack, or $.03 each; from 3¼x4¼ to 4x5, inclusive, $.30 a pack, or $.04 each; 5x7, $.50 per pack, or $.05 each.

Prints—1¾x2⅜ and Vest Pocket, $.03 each; 2¼x3¼, $.04 each; 2½x4¼, 3¼x4¼, 3½x3½, $.05 each; 2⅞x4⅞, 3¼x5½, 4x5, $.06; 5x7, $.09 each. SPECIAL PRICES IN DOZEN LOTS FROM ONE NEGATIVE.

You will find some who charge less, but you won't get the results that we give you. These prices include an individual attention, scrutiny and care to your order, whether small or large, that few if any other houses give you. AND DON'T FORGET OUR ADVISORY DEPARTMENT. We help you with your camera troubles—help you to make better pictures—WITHOUT CHARGE, whether you order work done by us or not. Consult us freely and tell us where you find difficulty in getting good pictures.

CLARK & CLARK

175 North Wilson Ave. - - - - Pasadena, Calif.

Bee Hives and Supplies

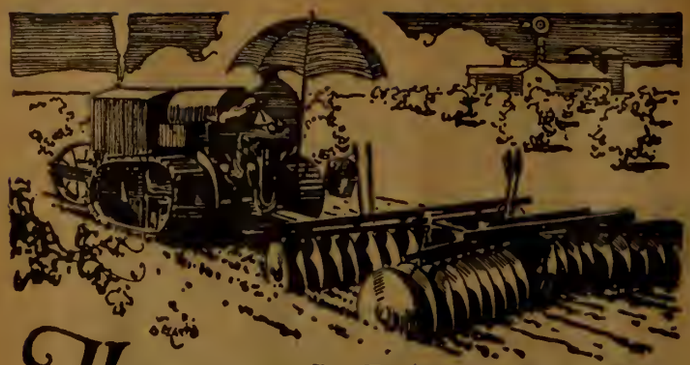
Headquarters for everything needed in the care of bees. Send for late price list and free booklet.

The A. I. ROOT COMPANY, Dept. B,
1824 E. 15th St., Los Angeles, Cal.
PACKERS OF AIRLINE HONEY

Going to Build?

Send for our Price List of Lumber. We save you middleman's profit. Sash, Doors and Builders' Supplies.

Contractors' and Builders' Supply Co.
1401 Fifth St. Oakland, Cal.



How much heat should a tractor oil stand?

And how long should it "stand up" in that heat? Tractor oil *must* resist high operating temperatures if it is to keep your working equipment on the job.

Zerolene resists heat. Fill your tractor crankcase with this lubricant of stability, refined from crudes carefully selected for heat-resisting quality.

Oiliness — Purity

Zerolene penetrates to small-clearance bearings and clings evenly. At the same time it splashes freely, and you get all the power your tractor engine is rated to deliver.

Because it has purity, Zerolene burns clean, and deposits but a small amount of carbon, so soft and flaky that most of it blows out harmlessly with the exhaust. An exclusive high-vacuum refining process has removed all impurities, yet retained the highest lubricating value.

Consult the Zerolene Correct Lubrication Chart for the correct grade for your tractor, truck or automobile.

STANDARD OIL COMPANY
(California)

"An analysis of Zerolene shows that it maintains always the right 'body' at all operating temperatures, following in close relation the decrease in bearing clearances caused by heat expansion."
—*Board of Lubrication Engineers.*

The Standard Oil ZEROLENE For Motor Cars

more power & speed ~ less friction and wear ~ thru *Correct Lubrication*

Dependable Engines for the farm

The famous *Fuller & Johnson* Farm Engines are carefully built to give long, faithful service at low operating cost—there are sizes to fit every need up to 25 h. p. The illustration shows the Pump Engine which delivers 270 to 2500 gallons of water per hour.

Write for catalog "F" & name of nearest dealer.

Pacific Pump & Supply Co.
853 Folsom Street
San Francisco

Save Your Roof

Asphaltoid ROOFING PAINT

15c a gallon

Finest preservative and roof paint under sun. Why pay more—just because a paint store sells it? We are producers of basic product, Asphaltic Oil; it goes direct from producer to you. Write for free sample and particulars.

WOOLNER OIL CO.
4th and Commonwealth, Los Angeles.

BOYS AND GIRLS Their Work and Play

Do You Like Beads?

ONE of the prettiest and newest designs in beads is not at all difficult to make. When finished the string is about 34 inches long, round and nearly the size of a pencil, and hollow in the center.

Four bunches of small glass beads are required. Red, coral and emerald are the most popular colors. Use number 40 white thread.

String seven beads on thread, then run needle and thread through the first bead, add a bead and run needle through third bead, add another bead, run needle through fifth bead, and so on in the same order. In this manner you skip a bead every time and each bead receives two threads.

If a mistake is made it should be taken out, as it will show very prominently.

After the chain is about 34 inches long, join the two ends and add a large fancy bead. A tassel may be made and added to the large bead.

It may be some time before you learn how to hold the beads, but do not be discouraged, for with a very little practice you can become quite proficient.

The Snow Plant

THE rarest and most delicate of Sierra flowers is the Snow Plant. The whole plant is blood red, lacking the usual green coloring matter. The Snow Plant is found most commonly in the Yosemite National Park, where it grows in the deep shade of the tall pines.

The Snow Plant has nothing to do with the snow, as is sometimes supposed. It is called a "saprophyte" because it lives on the dead decaying matter, such as leaves, bark and pine needles, and is not a parasite. The Snow Plant grows about eight inches tall, with a stalk about the size of a man's finger, without leaves. Its extremely delicate flowers, the size of a strawberry, are found near the top.

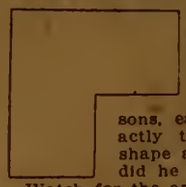
There is a heavy fine for picking the flower in Yosemite.—Milton M. Inman.

A Door Bumper Top

One of the freak tops popular with boys is the "Door Bumper Top," made by whittling down an old door bumper to the screw, which is filed off sharp for a peg. Have you tried one?

Fascinating Puzzle

Most of us like to work puzzles. Here's an easy one, although it may seem a little difficult at first.



A farmer owning a farm, the same shape as shown in the figure, wanted to divide it equally between his four sons, each part being exactly the same size and shape as the others. How did he do it?

Watch for the answer in next number.

Describing It

Little Jack had just seen and heard a goat for the first time. The next day in school he wrote this composition on the subject:

"The Goat is a animal about the same size as a big dog. It has a hatrack on his head and an auto horn somewhere inside. He has whiskers like Uncle William and his ears wiggle when he chews, just like the minister."
—Exchange.

How to Make a Blacking Stand

BLACKING one's shoes is no trouble if one has a stand and a place to keep the polish and brushes.

The drawing shows how the sides and end boards are put together. Those, as well as the rest of the stand, are made of finished one-inch boards. Be sure that you make the pieces the sizes shown.

In putting together, first nail the sides to the ends, then fit the bottom. Next nail on half the top, then hinge the other half to it, using butt hinges one inch wide. These make the neatest joint, especially when the wood is cut away, letting the hinges fit in even.

The foot block may be nailed on tight or it may be fastened on with a screw through the heel so that the toe will swing around to the end for the use of a cloth in polishing the toe of the shoes.

A pattern for the foot block may be made by tracing around a small shoe. Saw off the heel one-half inch to prevent slipping.

Minister (just finishing the sermon): I see some new faces in the congregation that I have not shaken hands with.

To make loose pegs stay in tops, put the peg in when the top is dry and soak in water over night.

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The Kadota Fig

PROBABLY no type or variety of fruit has attracted more attention during recent years in California than the fig known as the "Kadota."

The late Stephen H. Taft discovered this fig, and George Reynolds was the first person to introduce it into the San Joaquin Valley in the years 1905 to 1906.

W. Sam Clark, whose name enabled him to call his Kakota Fig the Clar(k) kadota, planted his orchard in 1913. The orchard now owned by N. E. Beckwith, was planted in 1915. The stock to plant the Beckwith orchard was selected from the best rootings from the combined nurseries of W. Sam Clark and Stephen H. Taft. Mr. Beckwith's orchard is now the largest genuine Kadota Fig bearing orchard in the San Joaquin Valley and he is also the largest exclusive canner of genuine Kadota Figs.

Recently the Beckwith Company acquired a 40-acre tract and factory site at Planada, near Merced in the San Joaquin Valley, for expansion of its business. The Planada Fruit Farms Company of San Francisco is developing a large tract in this district for exclusive planting to this variety of fig, experienced Kadota growers, including Mr. Clark having selected this location as the most ideal for its growth.

The Kadota is famed for early and heavy bearing, and for the quality of its fruit for shipping fresh. The following "14 points" are given by Kadota boosters as the reasons for its increasing popularity:

(1) It grows quickly and makes a strong tree; (2) It bears early (3rd summer); (3) It bears abundantly; (4) It bears two crops; (5) It requires no caprification; (6) There is no loss from smuts, splits, or sours; (7) It has good color and good shape; (8) It is the most solid and heaviest of figs; (9) It is practically seedless; (10) It is the best for preserving and canning; (11) It is the best for fresh shipment; (12) It brings returns to the grower early in the season; (13) It has no foreign competition in the market for preserves; (14) It presents the biggest opportunity because of an absolutely reliable and steady market for the preserved and canned article.

Indicative of the attractive profits realized from Kadota trees are the following figures, based on a nominal net price to the grower of 5 cents a pound, and taken from actual records of a Planada orchard:

3rd year, 600 lbs. per acre @ 5c on the tree, $30.
4th year, 2000 lbs. per acre @ 5c on the tree, $100.
5th year, 3500 lbs. per acre @ 5c on the tree, $175.
6th year, 6000 lbs. per acre @ 5c on the tree, $300.
10th to 15th year, 16,000 to 20,000 lbs. @ 5c on th etrce, $800 to $1000.

The fig industry is comparatively in its infancy in California, and because of the limited area in which the Kadota may be grown successfully, horticultural experts predict almost unbelievable profits and orchard valuations for those with the foresight to plant and acquire desirable fig lands at the present time.

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I have a little paradise all my own out under the blue sky—in the sunshine and fresh air—close to Nature. In this wonderful climate of California I have a garden all the year around, and my table is filled with the choicest vegetables, fruits and berries. We have our eggs, butter, milk and meats. We have chicken, rabbit, squab or pork for dinner any time. Our bees give us the most delicious sweets. Truly, we live in the land of the plentiful. So enthusiastic was I over this healthy, sane way of living on a little farm in California that I established Runnymede, the Charles Weeks Poultry and Garden Colony, where my friends live this free and independent life with me at Palo Alto, Cal.

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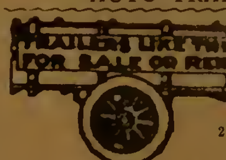

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Orange Blossoms

(Continued from Page 12)

First, disillusionment had come at the studios. Later, at the theaters, other dreams had gone down in the dust. And with the failing of each cherished ideal, appreciation of her home, resting securely and peacefully amid the acres of oranges and lemon trees had increased. But her stubborn determination had driven her on.

"I waited table, Ben. I worked in stores, in hotels, at mountain resorts, in kitchens, in railroad eating houses—and the men——"

She clenched her hands at the thoughts which came surging to her.

"Some of them were beasts," she said, with head averted. Then softly, "I've been a little fool, Ben, and I'm ready to go home." She glanced up with tear-brimming eyes. "That is—if they want me."

"Want you? They want you more than anything else on earth."

TWO hours later they were on the old familiar front porch and Ben was ringing the bell, but Marilyn's heart was filled with strange forebodings. Weeds had encroached on her once carefully tended flower beds; the windows were unwashed. There was no sound of contented clucking of busy hens. Old Prince, the pensioner, had failed to whinney at the sound of her voice.

A quick investigation showed them the place was deserted. There had been no sound of fowls, because there were none, and the corral was emptly. The grove was sadly neglected, the ground, weed covered, and an air of desolation hung over the homestead.

Ben forced up a back window, clambered in and admitted Marilyn by the kitchen door. The interior told the same story.

"I am going to find out about this," he told her, starting for the front door.

"But I don't want to be left alone," she protested as she followed him into the hallway.

There was something in her voice that made him turn suddenly, and, seeing surrender in her eyes, he took her in his arms and covered her face with kisses.

"And I don't want to leave you ever," he breathed. "I've loved you, Marilyn, ever since the first day I saw you. This place, without you, was a wilderness. I did not have a happy moment until I found you. Could you—do you—would you love a tramp?"

"Tramp!"

With mock indignation she drew herself from the shelter of his arms. Then a roguish twinkle came into her eyes.

"I might, if he could find the rest of my family."

One more quick embrace, one long kiss and Ben was on his way with great strides to Glenmoor, the county seat, two miles away. He was no sooner out of sight, than the girl hurried forth to the little country store, a short distance down the highway.

When he returned, Marilyn had a dainty luncheon on the table, and, as they ate, Ben told her the home place had not been rented for several months and that Nettleton, the agent, had instructions it was not to be let unless the prospective tenant furnished a $1500 bond to insure good care and upkeep.

"I didn't say anything about your being here because I have been trying to figure out a plan. If I could get $1500 we could rent the place and stay right here, and, when your folks came back, everything would look the same as in the old days."

Marilyn corrugated her brow in thought. Then she jumped to her feet.

"Wait right where you are," she commanded, and a few minutes later she was back, handing him a bundle of bonds worth exactly $1500.

"How——?"

"Don't ask any questions," she commanded him. "I'm your fairy godmother. That agent ought to be glad to see you," she hinted broadly.

IT WAS late afternoon when Ben returned with a lease in his pocket, together with some additional papers, for he had transacted some other very important business. As he neared the house he heard the sound of voices, and when he entered he found Marilyn in her mother's arms. Nearby, her father looked on smilingly.

"We got tired of living in the city, he was explaining, "and then we started traveling. We went everywhere looking for what we found right here at home five minutes ago."

As Ben reached the threshold, Mr. Hartman left the room. In a moment he returned, his face pale, his hand trembling. He held a long black metal box.

"I've been robbed!" he cried hoarsely, holding out the empty container. "Those thieving tenants! I didn't think anybody could possibly find my secret safe. Nobody knew of this box—except——"

Whirling, he pointed an accusing finger at Ben.

"You saw me take it out once to get money to pay the hands!"

Ben stood petrified in astonishment. Marilyn ran to him and slipped her hand in his.

"I knew the combination, father. He didn't touch your money! I took the bonds!"

"What did you do with them?" Hartman's voice was cold and hard.

"I gave them to Ben."

Ben reached in his pocket and drew forth a receipt for the bonds and the lease for a year, handing them out in silence to Marilyn's astonished father.

Hartman's face turned scarlet.

"Father," rebuked his wife, "you owe Ben an apology."

"I—I'm sorry, my boy. How can I make it right?"

Ben whispered to Marilyn and her head nodded assent. A vagrant breeze stirred the tree leaves outside, then wandered into the room, swaying the curtains gently and filling it with the sweet fragrance of orange blossoms.

"If you can spare the time," Ben was smiling broadly, "there's going to be an exclusive wedding at the Church of the Angels in about an hour, and the law says at least one witness is necessary."

And he bent and kissed the blushing Marilyn full upon her lips.

Fence of Redwood Pickets

TEMPORARY fences for hogging off cover crops are easily made by the use of pointed stakes made of cull redwood.

In splitting hop poles, grape stakes and other long lengths of redwood, there are [illegible] that will not work into long stakes. These are made into [illegible] lengths for fence pickets, and are sold at a reduced price.

These stakes are sharpened and driven into soft ground after a rain in winter or along an irrigation corrugation in summer.

Permanent fences are made of split redwood pickets by setting regular fence posts, about twenty feet apart, in the line of fence. No. 9 fence wire is woven in and out between the pickets. The wires are then stretched taut and stapled to the posts and pickets.—H. A. Shearer.

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There Is a Great Demand for Trained Auctioneers on This Coast.

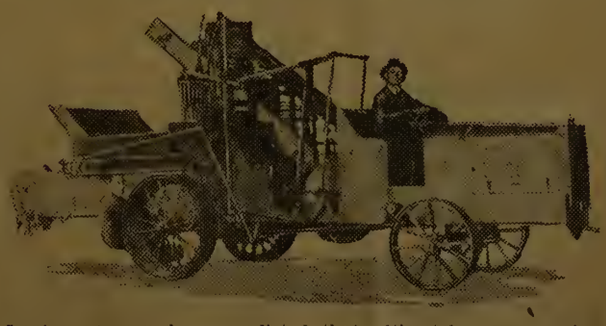
Young man, read this carefully. Don't be the victim of indecision. Act at once. One good sale will repay you the entire cost of this training. Write for folder giving complete information. Can give references.

F. STARKWEATHER
PASO ROBLES, - - - - - - - CALIFORNIA.

The New "Bennett" Hay Harvester

The latest invention of national importance in the farm implement field and one that lowers the cost of harvesting hay more than 50 per cent.

A MAN, A BOY AND A "DRIVER"
Complete Your Harvesting Crew



Implement men have predicted that ultimately some genius would invent a harvester that would travel over the field on its own power, gather the hay from the swath or windrow and bale it, in one operation.

No Horses; No Pitchforks; No Hard Labor

Mr. Bennett has accomplished this prediction and the new "Bennett" Hay Harvester will revolutionize the hay industry.

Write for Detailed Information

COMMON SENSE FARM MACHINERY CO.

3RD AND MAIN STS.
Phone 824-844.

519-20 ROBERTS BLDG.
Los Angeles, Cal.

A Kadota Fig Orchard at PLANADA

(A sound investment with an exceptional return on your money)

A HOME, AN INVESTMENT, AN INCOME

(In the heart of the Proven Fig Belt, 8 miles east of Merced, California)

WHY OTHERS HAVE BOUGHT:

Fruit Growers, Business and Professional Men, Mechanics, Conservative Investors, LARGE and SMALL, have made the most careful investigation and have bought at PLANADA because they have assured themselves of

SAFETY AND PROFITS

and because they know

That a Kadota fig orchard should pay $600 an acre during the first six years after planting and that under our plan of sale this entire amount will be received by the purchaser and that a mature fig orchard at Planada, planted 76 trees to the acre, should pay, according to Mr. Beckwith, the largest grower and canner of Kadota figs, from $600 to $1200 an acre per year, when the grower receives 5 cents a pound on the trees.

FIVE ACRES on this basis would give you
AN INCOME OF FROM $3000 to $6000 A YEAR
(You don't have to live on the land unless you wish to.)
(Growers are now—1922—actually receiving 10 cents a pound in the orchard)

And Because They Have Found Out That

The men who own Planada Fruit Farms are men of absolute responsibility and exceptional standing in the community who have invested their own money and couldn't afford to be identified with anything that failed of success.

And Because

they have seen at Planada the actual results of their work and the evidence of efficient and successful management and of conscientious attention to the interests of the many people who HAVE ALREADY PURCHASED AND ARE SATISFIED.

And Because

The Market for Kadota Figs is assured.
A large canner in the San Joaquin Valley said the other day: "The demand for Kadota figs is growing faster than the supply. Where we got an order for a case last year, we are now asked for ten cases, and last year's 10-case orders call for 100 case shipments this year. The growers are no more anxious to have their new orchards bearing than the packers are to get their figs."
YOU CAN SEE WHAT YOU ARE BUYING AT PLANADA AND CAN BE SURE that the conservative purchasers there who are satisfied with the progress made are a GUARANTEE that you will make no mistake in investing. WE ARE OFFERING YOU a business proposition that has been approved by business people.
Purchase price includes all care, cultivation and irrigation for a term of years. Experience with Kadota figs shows that crops should take care of payments after third year. If you wish to take advantage of this as an investment opportunity only and do not wish to live on the land, a responsible organization will contract to extend this care indefinitely and attend to the marketing of your crops.

MAIL THIS COUPON

PLANADA FRUIT FARMS,
643 Mills Building, San Francisco.
Send details of your Kadota Fruit Orchards.

.....

.....

(Five, Ten or More Acres Means Independence)
ONLY $100 PER ACRE CASH DOWN

CALIFORNIA STATE FAIR

Sacramento, September 2 to 10, Inclusive, 1922

One great, inspiring panorama of the California Wonderland
BIGGER AND BETTER THAN EVER

More Than
$100,000
in Premiums and Purses

California's One Big Week
of Enlightenment and
Entertainment

AGRICULTURE — HORTICULTURE
The Greatest Livestock Show in All the West
POULTRY — MINING
Vocational Education and the Three R's
Power on the Farm — Manufacturing
The State's Unbounded Natural Resources Exploited

From every corner of the Golden State are gathered the finest and best examples of its products and resources, so that our citizens and our guests may gain some idea of the potentialities which lie under a surface so far only scratched.

SEVEN NIGHTS OF BIG HORSE SHOW
FAST RUNNING AND HARNESS RACES DAILY. FULL ENTERTAINMENT PROGRAM. PACIFIC COAST INVITATIONAL FIELD AND TRACK CHAMPIONSHIP MEET UNDER THE AUSPICES OF THE A. A. U.
EXCURSION RATES ON ALL RAILROADS

CHAS. W. PAINE, Secretary Manager. H. A. JASTRO, President.

Down River From Sacramento

(Continued from Page 11)

simple, accounting system that Mr. Mendenhall is able to handle this immense tract as well as some 40,000 acres elsewhere, also under his supervision.

The basis of the system, which may be applied by the individual farmer, is a daily report from men in the field. Blanks are furnished, upon which foremen, tenants and workmen are required to furnish certain information. A few moments each day spent in reporting creates, in the aggregate, a comprehensive record, always up to date, from the men who actually are in the field.

That tenants and land owners of the Holland tract are "sold" on their own section is indicated by the interesting fact that 72 per cent of the land disposed of to date was purchased by former renters or neighboring farmers.

And now President Mendenhall has sounded a call which promises to grow into a movement of large proportions as public organizations and other concerns take it up.

"Let us put to work the idle dollars of the cities to develop our great areas of agricultural land," he pleads. "Thousands of acres of undeveloped land await only the touch of capital to unlock the enormous untouched resources of our State.

"Let every business man, manufacturer, professional man, invest in a bit of land. Let him improve it and plant field crops, vineyards and orchards.

"Not only will this create wealth, but it will make our people more contented. It will help to strengthen the bonds between city and country. It will broaden the outlook of city residents, and encourage the farmers because of the increase in property value that is sure to result from more intensive development."

A campaign now is in progress to interest land-hungry denizens of the cities in the rich silt soils "down river." And, judging from the evidence on every hand, those who heed the call will not wait long for attractive returns upon their investments.

"Waiting for the River Boats"

A Farm Scale House

EVERY farmer needs conveniences for weighing what he sells and buys, as well as an office where he can transact business in a business-like manner.

He may not spend a great deal of time in the office, but it is the only place to keep farm records with system

enough to find them when wanted.

I built a little office for a farmer in Idaho a few years ago. It was just big enough for a desk and two chairs. He spent most of his time in the alfalfa fields.

However, it served the purpose and saved valuable records for immediate and future settlements. Since that experience, I recommend a building that combines both scale house and office, for the following reasons:

Wagon scales should be protected from storms. It is difficult properly to brace a small structure that is open at both ends with a clear passage through; therefore, I extend the roof on one side and enclose an office room about five or six feet wide by eleven or twelve feet long.

The sides of this room are braced with diagonal braces between the studding.

The long, slanting roof is collar-beamed and triangled with the short rafters over the wagon scale to make a strong building with light material.

The glass office door should look to the south and the desk window to the north, because an office is warmer and more cheerful where the sun shines in at the door, and a dead north light is better for working at a desk.

A scale rack supported by the scale platform, is more accurate for weighing live animals than the fence or the side gates sometimes seen at public scales, because of the crowding against the sides of the enclosure.

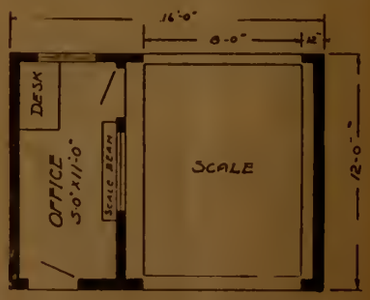
Concrete makes the most satisfactory foundation and scale pit.

The illustrations herewith need but little explanation.

The manufacturer generally supplies detail drawings showing how to make the scale pit, and the local agent of the company sets the levers, places the timbers and erects the beam box.

It is best to have this work all done before the scale house is built. Any good carpenter then can build the scale house.

Racks to confine live stock while being weighed may be purchased from the scale company, or made on the ground. The rack is made in four parts, with corner posts that hook together. These posts are set into sockets in the corners of the scale platform. Extra long platforms have six sockets.—H. A. Shearer.



FLOOR PLAN

Hay Harvester

THE combined hay gatherer and baler, known as the "Bennett hay harvester, described in a recent number of ORCHARD and FARM, was given a thorough field trial on the alfalfa ranch of the American Beet Sugar Co., near Chino, Cal., during the latter part of August.

This unique machine invented by a Los Angeles County farmer is designed to gather the hay from the swath or windrow and bale it in the field while in motion.

In the recent demonstration working first without the loading device, the self-propelled press handled satisfactorily all the hay that was thrown into the hopper. The crew consists of a driver, a boy and another man.

Sunflower

GOOD BUSINESS

I keep my cows on pasture—
That's why their milk is prized.
My customers know it's safer,
Because it's pasture-ized!
—Justin Nutt.

A Lingering Hate

Comedian—"Poor old Harry got the gate properly last night. They hissed him right off the stage. Then I came on. The audience quieted down and listened to my first number with every attention. Then, just as I was giving 'em my patter, derned if they didn't start hissing old Harry again."

Seems Logical!

"Where is the home of the swallow?" asked the teacher of the natural history class.

A long silence was followed by the waving of a solitary hand.

"I know," declared little Billy, with serious mein. "The home of the swallow is in the stummick."

A Soft Job

"Yes," remarked Ben Gonnadooit, yawning. "When I was with the railroad company I had the best job I've ever held. I wish I had it now."

"And what was that?"

"I was assistant to the man who taps the wheels of the cars to see if they are all right. I helped him listen."

Some Service

"Now, suh," said the colored bellhop at the Southern inn. "When you-all wants t' be called in th' mohnin', jes press de button at de head ob youah bed an' we'll come up an' call yo'."

Gleam of Hope

"John! Wake up! I'm sure there's a burglar downstairs."

"All right. Wait until he starts to look around; then I'll give a yell and scare him, and maybe he'll drop something he has stolen elsewhere."

Wanted Action

Little George, the infant prodigy, had rendered part of his program, when he became a bit impatient with his accompanist.

Pausing, with his violin under his chin, he hissed, "Miss Jones, louder! Step on the gas!"

Easily Handled

Instructor—"My boy, do you think you can handle the English language?"

Student—"My knowledge of the English language always has been my greatest asset."

"Good! Take this dictionary down stairs."

Honor Among Thieves

Recently there was much discussion about the proposal to establish the honor system, so called, in a large Eastern penitentiary. It was finally decided to put it up to the prisoners themselves to decide—surely they would know whether they could play the game honorably or not. It was put to vote.

"Hey, Spike," said one tough-looking citizen, out of one corner of his mouth, to another prisoner, "did yer vote for the honor system?"

"Betcher life, kid—four times."

Uncle Eben—"By crickety, that wood pecker must have a strong bill!"

Montgomery Ward & Co.

The Oldest Mail Order House is Today the Most Progressive

Don't You Miss this Money Saving Opportunity

This Catalogue is Yours FREE

This Golden Jubilee Catalogue Celebrates Our Fiftieth Anniversary by Offering You Everything for the Home, the Farm and the Family at the Lowest Prices of the Day

TO write today for your free copy of this big Golden Jubilee Catalogue will mean a saving of many dollars to YOU this Fall.

It answers every question about price, establishes for you the right price to pay for everything you buy.

Fifty years' experience in manufacturing—in right buying—has gone into this book. Fifty years' experience in low price making is here at your service.

Write for this Catalogue. Know the right price to pay for everything you buy. Take advantage of the many big bargains it offers—the many, many things offered at less than market prices.

This advertisement is printed to tell you of the saving this book offers you, and to tell you that one copy of this Catalogue is yours—FREE. You need merely write us a postal, or fill in the coupon below, and one copy of our big Golden Jubilee Catalogue will be mailed you FREE.

TO THE WOMAN: This free Catalogue offers you the newest styles, selected by our own Fashion Experts. And all the usual extra "style profit" has been eliminated from our prices.

It offers you everything for the home at a big saving: Rugs, Carpets, Curtains, Furniture, Home Furnishings of all kinds of standard quality at money saving prices.

TO THE MAN: Think of an all wool—virgin wool suit for less than $15.00. This is an example of our Golden Jubilee Bargains. Everything a man needs, to wear or to use, is offered at prices that mean many dollars saved.

FOR THE FARM: For fifty years the American Farmer and Montgomery Ward & Co. have helped each other. This book outdoes all our past achievement in making low prices for you.

Fencing, roofing, tools, paint, hardware—everything the farmer needs is offered at a saving.

Your Orders Shipped Within 48 Hours

We announce a new perfected service for you.

After a year's work and study, originating and testing new systems, and employing experts, we have perfected a new system that makes certain a very quick and satisfactory service to you.

Practically every order that comes to Montgomery Ward & Co. this season will actually be shipped and on its way to you in less than 48 hours.

Lower prices, better merchandise, and now a new service. True it is indeed that: "Montgomery Ward & Co., the Oldest Mail Order House, is Today the Most Progressive."

MONTGOMERY WARD & CO.

Chicago Kansas City St. Paul Fort Worth Portland, Ore.

Mail this coupon to the one of our five houses nearest you

To MONTGOMERY WARD & CO., Dept. 66-11
Chicago, Kansas City, Saint Paul, Fort Worth, Portland, Ore.

(Mail this coupon to the house nearest you)

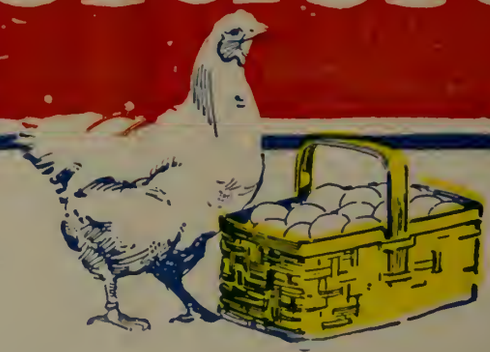
Please mail me my free copy of Montgomery Ward's Golden Jubilee Catalogue.

Name.....

Address.....

what method of feeding do you use—

trust -to- luck *or* trust -to- cluck



THE difference between a poor-paying flock and a profit-paying flock is the difference between take-chances and take-NO-chances. Indifferent, haphazard, "trust-to-luck" feeding will never pay. It can't! Nothing will rob you of your rightful profits as quickly as blind feeding. True, your hens may live and be fairly healthy on a poor ration. But—

You are in the poultry business to make money. The more eggs you get the more money you net. You must realize, then, that it takes an excessive amount of a hen's energy to convert poor feed into money as against converting good feed into money. So that—far from saving money—the only result of a "cheap" ration is a *higher cost* for each dozen eggs produced.

A tasty, well-balanced ration is absolutely necessary for maximum production—that's sure! Equally sure is the fact that a uniform, quality-feed like SURELAY pays its way—and more! Its slight added cost comes back to you many times over in the extra eggs produced.

Have you ever compared the results you're getting from "trust-to-luck" feeds with the results other poultrymen are getting from SURELAY? After all, the real profit-point is this: What do your *hens* think of the feed you give them—and what do they do with it?

Why not put this egg-production question squarely up to your hens? Feed them SURELAY—a prime, true-to-test formula that has weathered the years—and let the results speak for the feed and for us. Meanwhile we suggest that you write for your copy of the new, enlarged edition of "Makes Hens Happy." It is the most complete and helpful handbook on poultry husbandry we have ever issued—and it's free. Simply clip the coupon—and mail today!

SURELAY

"A Sperry Product"

Poultry and Stock Feed Dept.

SPERRY FLOUR CO.

204 Weber Avenue
Stockton, California

Please send me, without obligation, your new handbook "Makes Hens Happy"

Name _____

Address _____

SPERRY PRODUCTS IN EVERY HOME SPERRY FLOUR

ORCHARD and FARM

OCTOBER, 1922

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Offices: Los Angeles and San Francisco

TEN CENTS

"The Goblins 'll Get You If You Don't Watch Out"

The Tester Knows

The only sure and accurate way to determine just how close your separator is skimming is by means of the Babcock Test, and the most accurate operators of the Babcock Test are the cow testers employed by the various cow testing associations. The following statements from cow testers are interesting:

—"The closest skimming of milk I have in this association is done with a De Laval. Of the 29 separators in this association 16 are De Lavals."—Tester for the second largest association in Minnesota.

—"De Laval Separators and Milkers are to my mind superior to any other makes. The separator is the most efficient skimmer of milk and its durability is lasting. In this community we have practically all De Laval Separators." — Tester for a Pennsylvania association.

A De Laval soon pays for itself and is sold on such easy terms that you can use it while it is doing so.

De Laval Pacific Company
61 Beale Street San Francisco

Sooner or later you will use a
De Laval
Cream Separator and Milker

Most Cash for Western Furs

Get Ready to Trap Now

Furs are higher. **Coyotes, Muskrats, Skunks and Wildcats,** and all other Western Furs, will bring you **More Money** this year. Get your supplies from **Stephens** and be ready to trap early.

Traps at Factory Prices

Stephens sells Traps, Animal Baits, and all Trappers' Supplies at **Rock Bottom Prices.** Western Trappers save Many Dollars and **3 to 14 Days Time** by buying from **Stephens** of Denver.

Stephens Bait Gets 'Em!

Christian Ramsey of Roswell, N. Mex., caught **24 Muskrats** with **25 Traps,** using **Stephens' Muskrat Bait.** Hundreds of Trappers do as well every year, proving **Stephens' BAIT IS BEST.**

How to Grade Furs

Learn to do it yourself. Our **Trappers' Guide** contains detailed instructions by Mr. Stephens, who has spent a lifetime in the fur business. **Free.**

Stephens charges you **No Commission** on your furs---YOU keep that yourself. All Western Trappers who ship furs to **Stephens SAVE $1 to $20** on express or parcel post; and you get your **MONEY 3 to 14 Days Quicker---BECAUSE Denver is closer to your town** than any other Important Fur Center.

WRITE TODAY for Big, Beautifully Illustrated Trap and Supply Catalog, Trappers' Guide (with grading rules), Fur Price List, and Shipping Tags, all **FREE**

E. A. Stephens & Co.
526 Stephens Building Denver Colorado

1-22

CATERPILLAR

Reg U.S Pat Off

T-35 TRACTOR

price reduced $375

effective September 1st

The field performance of "Caterpillar" T-35 Tractor has created a big and constantly increasing demand which requires increased production & makes possible this reduction in price of "*the* Supreme Small Tractor"

See it at the State or County Fairs
Write for fully descriptive literature

The Holt MANUFACTURING COMPANY
Stockton, California *Peoria, Illinois*
Spokane *San Francisco* *Los Angeles*

OUR EDITORIAL POLICY

ORCHARD and FARM is a magazine of, by and for agricultural people. We believe that to the tiller of the soil is due the best that life affords. We believe he is the bulwark of the Nation. We honor him as the basic producer. His problems are our problems; his triumphs, our triumphs; his joys and sorrows, ours. To record his achievements and expose the duplicity of his enemies; to fight for and with him; to give him genuine help and practical information; to assist, entertain and inspire every member of his happy household—that is the policy of ORCHARD and FARM.

ORCHARD and FARM

ESTABLISHED 1888

Published Monthly by Country Life Publishing Company
1111 South Broadway, Los Angeles, California
"THE SILENT PARTNER OF THE SUCCESSFUL FARMER"

YOUR QUESTIONS ANSWERED

ORCHARD and FARM is an institution of service. Subscribers may receive free of charge answers to questions upon any agricultural subject. Through its large staff of specialists, and its close contact with authentic sources of information, this magazine is able and willing to serve any subscriber who requires aid or information. Be sure to write name plainly and to give complete address, including street, R. F. D., or box number.

VOL. XXXIV Entered July 16, 1917, as second class matter at the Post Office of Los Angeles, California, under act of Congress of March 3rd, 1879. Subscription price, $1 a year. NO. 10

Pithy Paragraphs

Our State would be better off if we had less oil stock and more live stock.

Team work is a great thing; the horse that hangs back always gets the most whacks.

Nowadays a home without a mortgage is about as rare as a family without a car.

The news from Constantinople is disquieting, but we know of one proud "turk" that won't live through November.

Uncle Wiseacre says a runaway boy is like a postage stamp—there's nothing like a good licking to make him stick.

It is hard to hold a good man down—and it's dangerous to hold him up.

A patent medicine vendor offers 50,000 Russian rubles free with every box of his remedy. Rather a bitter pill for Russia!

Once there was a farmhand who didn't kick about the grub. He worked in a dairy and was on a milk diet.

Now comes ye merrie autumn time. The thrifty man, forsooth, doth climb upon his roof and strive to see if any gaping holes there be. Next digs he in the drainage ditch, making sure there'll be no hitch when winter's torrents seam the hills. And then, at night, he sorts the bills—bills for tires and bills for gas; school clothes for each lad and lass; bills for doctors, dentists, freight—interest and real estate; bills for furniture and oil, tractor parts and laborer's toll; seed and shoes and ham and flour—they intrigue him by the hour. BUT, it's also income season. Crops were good and he has reason to believe he'll make a "killing," and no doleful tears he's spilling. In other days he might have lost, with naught to figure but the cost. But now he pools with other men; things are not as they were then. And so he smiles in contemplation—grateful for CO-OPERATION.

ORCHARD and FARM hopes the harvest moon has smiled upon every subscriber, and that the coming winter season will bring to each member of our family good cheer, health and increasing prosperity.

Cordially,

Jas. C. Kyllin

Editor

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We Will Exaggerate a Bit—It Must Be the Climate

A STORY is told of a newcomer to California who had heard of the great success of one of his neighbors in the production of superior tomatoes. Whereupon he sent his son over for 50 pounds of the luscious vegetable. But the boy returned empty-handed.

"The man said he is sorry, Dad," was the report. "But he can't cut a tomato for anybody."

Easterners accuse Californians of gross exaggeration, but this attitude may be due more or less to jealousy! Of course, California, in the past, has been somewhat over-advertised, just as was the case with many commodities.

But, thanks to the vigilance and high ideals of the men engaged in the advertising business, modern advertising is founded upon, and confined within, the truth! And the reader may study "ads," with assurance that they will prove instructive, interesting and valuable.

Do not lay aside this copy of ORCHARD and FARM without reading the advertising columns. The answer to each of the interesting questions below, may be found in an advertisement on the page listed opposite.

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Confidential Chat

Luther Burbank, in this issue, gives some interesting facts about berries, gathered in the course of his research work. One of the secrets of Burbank's great success is the fact that he has always had the study habit. The necessity for spending long hours among his plants has not deterred him from reading, and his desk is surrounded by shelves filled with many kinds of books. Such little writing as he is able to accomplish, is done at night—and published only in ORCHARD and FARM.

The theft problem has become a serious one for many California farmers and fruit-growers. One Orange County citrus man recently told us of the loss of more than $700 worth of fruit in one season. A poultryman of our acquaintance was raided so frequently that a high wire fence and two mastiff dogs were resorted to for protection. And in this number, O. H. Barnhill, Contributing Editor, tells how a producer of fine melons has established an armed guard in order to save a little of his produce to sell. Here, indeed, is "something to think about." Will the country districts have to maintain local police protection, like that of the cities?

GEO. C. ROEDING

George Roeding needs no introduction to ORCHARD and FARM subscribers. He is one of the best known nurserymen and fruit growers of the Pacific West. Mr. Roeding said recently to an ORCHARD and FARM representative: "We have only scratched the surface of horticultural possibilities in California. Products now grown as curiosities may eventually become more important than our "standard" fruits. The next ten years will be, perhaps, the most interesting in the agricultural history of our State."

TROUBLES OF A NOVICE

"That salesman misled me," insisted Mr. Subbubs, recently moved from the city. "He said this weeder was absolutely automatic and that after I started using it I wouldn't have a weed left in the yard. But I find it won't do a thing unless I am at the other end of the handle. I'm beginning to believe he deliberately lied to me in order to make the sale."

WHAT'S THE USE?

Sambo was raking the garden with a rusty, almost defunct tool, which lacked about half its teeth.

"Sam," admonished his employer, "why don't you get a new rake? You could do twice as much work."

"Yassuh," replied the old darkey, scratching his head. "Dat may be so, but ye see I ain't got twice as much work t' do."

To the Fruit Growers of California:

By J. E. BERGTHOLDT

Secretary and Manager of The Silva-Bergtholdt Company, Nurserymen, and one of California's most extensive growers of fruit.

YOUR MOST VITAL PROBLEM IS TO EDUCATE THE AMERICAN CONSUMER IN THE USE OF YOUR PRODUCTS AND TO EDUCATE THE RETAILER IN THE EFFICIENT DISTRIBUTION OF THESE PRODUCTS. THIS ACCOMPLISHED, EVERY ACRE IN CALIFORNIA THAT WILL GROW FRUIT, WHEN PLANTED, CANNOT SUPPLY THE DEMAND.

In my first announcement on "The Reason Why," I showed you that there were 44% less trees in orchard in the United States outside of California in 1920 than in 1910.

In my second announcement on "Another Reason Why," I called your attention to the evolutionary change in the diet of the one hundred and twenty million American people—consuming an ever increasing amount of fruit and vegetable products.

I showed you, also, that California, by reason of her natural climatic advantages, enjoys a practical monopoly in the production of the various articles of fruit food that go most largely into consumption.

REALIZING THESE FACTS, you, as a fruit grower of California, will be tempted to sit tight, in the anticipation that the decreasing competitive supply on the one band and the increasing consumption on the other, will insure the prosperity of your business.

But that won't work out in practice. Don't kid yourself.

For example, if you were manufacturing a commodity which every person deemed an absolute necessity, the success of your monopoly would depend altogether upon the degree in which you intensively and intelligently exploited the sale of the commodity.

THIS IS AN AXIOM IN SELLING, AND ONE UPON WHICH EVERY SUCCESSFUL COMMERCIAL ENTERPRISE HAS BEEN FOUNDED.

Publicity Needed for Green Fruit

During my thirty years' experience in horticulture, I have been a close observer of the marketing methods employed in the fruit industry. Your present co-operative marketing organizations are an evolutionary product of the experiences (and adversities) of the past.

All of these organizations, except the deciduous fruit (green fruit) shipping branch of the industry, are using a reasonable expenditure in intelligent publicity, a major portion of which is being employed in newspaper advertising.

It is a tragedy that the men constituting the beads of the various commercial fruit shipping companies and the California Fruit Exchange (green fruit) are so blind in their conservatism as to fail to see the advantage of the proper use of modern publicity methods. The products of this branch of the industry, constituting in value 20 per cent of the whole, are being marketed by means of the antiquated methods of a generation ago.

With the exception of the Pear Growers' Association, not one dollar is being spent in publicity toward increasing the consumption of these products. While the effort of the Pear Growers proved a modest experiment, it did demonstrate the efficacy and necessity of direct commodity advertising in green fruit.

Your various marketing organizations are all largely employing identical methods in their publicity.

Bergtholdt Plan is Safeguard

A year ago, in announcing the Bergtholdt Plan to increase the consumption of your products and increase the efficiency of your retail distribution, I urged you to do your part toward getting under way this movement, which would absolutely safeguard the industry.

I covered the subject fully in four public announcements. I cannot afford to buy the space to reiterate what I then told you, although it is of vital importance to you. If you do not have copies of these announcements, write me and I will be glad to mail you a complete set.

The major portion of the advertising expenditures on the part of your various marketing organizations are employed in newspaper advertising, having a total subscription of approximately fifteen million.

In my announcements a year ago, I proved to you by authentic deduction that, granting these advertisements 100 per cent efficiency, your advertisements could reach but six million readers of the fifteen million subscriptions.

Great Market Remains Undeveloped

Granting further that every one of these six million readers is a housewife, and that every one of the six million were prompted thereby to increase the consumption of your products—granting all of this—your present newspaper advertising, as now employed, is reaching but six million housewives out of the twenty million housewives of America. *How about the other fourteen millions?*

This is proof that newspaper advertising, though intensively employed, is inadequate to the task of influencing the whole.

Most of your organizations are publishing pamphlets, also, calling attention to the wholesomeness of their product and giving recipes for their use. I have been authentically advised that one of the most efficient of your marketing organizations, which has, for a period of years, made an intensive effort to distribute these pamphlets, succeeded in reaching, during these years, but three million housewives, and then only in a very fragmentary way. *How about the remaining seventeen millions?*

Most of your various organizations likewise employ practically identical systems of dealers' helps. The fact, however, that scarcely one in ten retailers exercises the efficiency in display and salesmanship of an average haberdasher, proves the inadequacy of these present methods toward increasing the efficiency of your retail distribution.

Need for Greater Organization

By these statements I do not mean to detract from the great good that has been accomplished toward increasing the value of your products by the methods as now employed. The results realized, inadequate though they have been, are well worth the expenditure, and this method of direct commodity advertising and direct selling efforts on the part of the various organizations should by all means be continued.

These facts, though, do prove that your present methods are inadequate, and that the task of informing the one hundred and twenty million people of the United States and Canada of the attractiveness, the economy and the goodness of your fruit products; and the task of disseminating these products among the people of the civilized world, is so vast and stupendous that the means so far employed by your organizations, though efficient to a degree, are totally inadequate.

I REITERATE TO YOU THIS FACT—*the American housewife, of whom there are twenty millions, and the public eating house absolutely control the consumption of your product; and the retailer is the agency upon which you absolutely rely for its intelligent distribution.*

NO ONE ORGANIZATION ALONE IS BIG ENOUGH FOR THE TASK; COLLECTIVELY IT CAN BE PUT OVER.

Even if one of your organizations, by enormous expenditure and intensive effort, did accomplish the task, do not lose sight of this one great economic truth; that no branch of the industry of itself will prosper for long alone.

The organization designed to put over the Bergtholdt Plan must be commensurate with the vastness of the fruit industry of California.

Market Expansion Object of Plan

This organization, in its direct appeal to the housewife, should create a book unlike any other publication or cook book, so edited and compiled as to fascinate and hold the interest of the housewife. It should embody suggestions as to the hygienic wholesomeness, the attractiveness and the economy of your products—so sincerely written as to be absolutely convincing; and, most important of all, it should contain a code of recipes compiled by the best expert culinary talent in the country. The book should be simple, wholesome, attractive and labor saving—a book de luxe, a gift that by its intrinsic value, its attractiveness and romantic interest, will be forever appreciated for its practical usefulness, and an indispensable necessity to every housewife.

This organization should, if possible, place a copy of this book in the hands of every one of the twenty million housewives of America, and should devise methods of publicity which will keep this book a live issue in every household.

Development of Foreign Markets

This organization, by means of this book printed in foreign languages, should function toward increasing the consumption of your products in the export trade. Other methods should be evolved for developing foreign consumption.

This organization, in a department created and manned for the purpose, should function to increase the consumption of your products on the part of the public eating house.

Most important of all, this organization assisted by the best advertising and salesmanship talent that can be engaged, should function in a department of aid to the retailer with the definite object of increasing the efficiency of your retail distribution. It should evolve a system by which the co-operation of the retailer is obtained toward keeping the book a live issue with the housewife. It should evolve plans for inducing the retailer to SPECIALIZE in the sale of California fruit food products in a SEPARATE DEPARTMENT. It should evolve efficiency methods in merchandising, display and salesmanship; in other words, it should function to make every retailer and retailer's clerk an efficient specialist in the sale of your products.

Fruit Growers Must Act

In the present status of the situation, it is up to the management of your organizations to create a preliminary organization. The functions of this organization will be, first, to secure by means of publicity, the support of every fruit grower outside of the organized branches of the industry, the aid of every factor engaged in the handling and manufacture of fruit products and of all allied industry; secondly, by publicity and a financial drive, equitably prorated, to OBTAIN THE NECESSARY FINANCIAL SUPPORT TO PUT THE PLAN OVER.

In the final analysis, however, it is absolutely up to you, the individual fruit grower, to set aside every other consideration and bring your influence to bear upon the management of the marketing organizations with which you are connected, to take action that will get this effort under way.

Your annual contribution to the cost of putting over the Bergtholdt Plan will be repaid to you, tenfold, each year in the increased value of your product. Every year that you defer you suffer, in depreciated values, many times the expenditure.

The consummation of this Plan will absolutely insure to you the permanence, the growth and the prosperity of the fruit growing industry, and through it, of California.

This is the third angle of my story, and the most vitally important. It is now up to you!

J. E. Bergtholdt

Secretary and Manager,
The Silva-Bergtholdt Company, Nurserymen,
Newcastle, California

ORCHARD and FARM

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Luther Burbank Discusses "Berries"

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THE blackberry, raspberry, dewberry, thimbleberry, salmon-berry, cloudberry, and wineberry all are members of that great genus of rose-like plants, *Rubus*.

It is a curious and interesting fact that a great percentage of our cultivated fruits and berries are members of one botanical family, the rose family, or *Rosaceae*. To this one family belong not only all the wild and cultivated roses, and the berries just mentioned, but also the apple, peach, plum, cherry, quince, pear, loquat, apricot, strawberry, Juneberry, and many other widely cultivated plants of great horticultural value, either for their fruits or flowers.

North America is essentially the home of the cultivated blackberry. No other country until quite lately has appreciated the qualities of this fruit sufficiently to cultivate and develop it. Wild species are abundant in Europe, growing everywhere in England and Ireland, along hedges and in many places; but as cultivated fruit, they are almost wholly untouched.

The prejudices against the wild blackberry among the Colonial settlers of America; and so deep-seated and conservative are the ideas of a people in regard to the worth of a fruit, that fully two centuries were needed for this excellent berry to work its way into cultivation.

Not until as late as 1841, or even possibly a few years later, was a single horticultural variety introduced. Then the Dorchester was first brought to notice, and about a decade later a better berry, the Lawton, which is still a standard, and two other varieties, the Holcomb and Wilson's Early were brought to the attention of fruit growers.

As an industry, blackberry cultivation has been almost wholly developed within the last 30 years; it began with the Lawton, which later was superseded by the Kittatiny in some sections. This in turn gave way to the Snyder, and now numerous other and better varieties are the standards. The evolution of this fruit has been gradual, but it has finally found a place in the horticultural ranks, and is capable of keeping pace with the most progressive; its true value at last is appreciated, and its culture and development, assured.

The dewberry is similar to the blackberry; its fruit, like that of the blackberry, remains attached to the cost or receptacle, while in the raspberry the core readily separates from the fruit. The principal distinction between dewberries and blackberries is to be found in the habit of growth—blackberries being of an upright habit, while dewberries trail along the ground.

Rubus nigrobaccus, a common plant in the more northern part of the Eastern United States, is chiefly the original source of our cultivated blackberries; while *Rubus villosus* and one or two closely-related species are the parents of the dewberries. Another wild species of the dewberry, *Rubus vitifolius*, of the Pacific Coast, has more recently become of horticultural significance, and has had an important role in the creation of valuable new

(Continued on Page 20)

WORLD FAMOUS NATURALIST CONTRIBUTES ONLY TO THIS MAGAZINE

ORCHARD and FARM readers enjoy a privilege shared by those of no other farm journal in the world. Luther Burbank's articles are prepared especially for this publication and may not be reproduced without permission.—Ed.

Interesting Example of Plant Improvement

The plant at the right is the original, wild Rubus Strigosus, or raspberry. Above is shown a cluster of fruit from the Rubus Strigosus, following several years' breeding and selection by Luther Burbank. All of the true raspberries now in cultivation have been developed from this native type.

How Melons Pay His Taxes---Fred Rapp's Profitable Sideline

MANY a "hobby" has grown into a profitable business, and similarly a "sideline" in agricultural production may become one of the most valuable crops. This was the case with Fred Rapp's melons. From less than three and one-half acres, Rapp has realized more than $1100 this year.—The Editor.

By O. H. Barnhill

CONTRIBUTING EDITOR OF ORCHARD AND FARM

TWENTY years ago the taxes on the 300-acre Rapp farm in Southern Oregon amounted to $150. One of the sons, Fred, is now paying nearly $1000 on 175 acres, including personal property. How to raise this amount of tax money every 12 months was one of the hardest problems young Rapp was called upon to solve when he took over the management of half the home place.

Alfalfa is the principal crop grown, the hay being stored in four big barns until it can be sold to advantage. of course, a part of the alfalfa money could be used to pay taxes, but this would materially reduce the annual income, especially in seasons of low prices. The present price at the barn is $10, but it has been as low as $4 in the field.

O. H. BARNHILL

Why not market this fine forage in the form of butter and milk, and thus increase the receipts therefrom? "Because," explains Mr. Rapp, "that would mean hired help every day in the year. My neighbor across the creek, Ed Foss, says that it takes about all one person's time to manage a hired man, lay out his work for him, see that he does it, and keep him supplied with tools and materials. Ed is replacing his peach trees with walnuts, so that he won't need so much hired help.

KEEPS ONE GUESSING

"It keeps a man guessing to make a profit on labor at the wages we have had to pay the past few years. Not only that, but a hired man breaks into a farmer's home life. He may be the best sort of a fellow, but we don't like to have company at every meal and every evening, because those are about the only times my wife and I have a chance to talk to each other and play with the kids. She has enough to do without cooking for another man. Yes, I could build another house and get a married man, but that would mean trouble of another kind."

Rapp finally decided that melons were his best bet when it came to beating the tax game. This year and last he has sold some $2,000 worth of watermelons and muskmelons, which more than satisfies the tax collector. Last year melons were scarce and high, selling for 3½ cents per pound. From 11-3 acres $870 was realized. This year the price is 2 cents and the sales from 3½ acres up to September 8 were a little over $1100. Most of the melons are sold to Ashland dealers, house-to-house peddling being unnecessary.

Such large returns from a small acreage sounds like easy money, but heavy yields and good prices are never obtained without hard work and the exercise of good judgment. Rapp has been raising melons for 15 years, learning more about the business each season. Three factors contribute to his success: Suitable soil, favorable climate and near-by market. Others have the same advantages, however, which proves that, after all, it is the man that makes the melon and sells it.

The soil is black, sandy, creek-bottom loam, rich and easily worked. Seeds are soaked in water for a few hours in the forenoon, then mixed with a panful of sand and placed in a manure pile for warmth. During the afternoon the position of the pan is changed until the proper temperature is secured. By morning the seeds have begun to sprout, when they are planted in a well-prepared seed-bed, about the first week in May.

HOW MELONS ARE PLANTED

The first plantings were made in hills eight feet apart both ways. They are now placed ten feet apart, and next year this distance will be increased to twelve feet. Nothing like giving melons plenty of room if you want them to grow big, says Mr. Rapp.

Frost killed three-fourths of the plants May 24, necessitating replanting this year.

Cultivation is done mainly with a two-horse spring-tooth cultivator. Deep cultivation is withdrawn from the hills as the plants grow, a one-horse garden cultivator and hand hoe being substituted for the spring-tooth, and care taken not to disturb the rootlets.

SPRAYING FOR APHIS

Aphis appeared the last of May, necessitating spraying with a weak solution of nicotine. Plants were resprayed every week for six weeks. A hand pump was used and care taken to wet the under side of the leaves.

Wilt or blight killed a few plants. The cause and cure of this disease is unknown, but the spores must live in the ground, for the longer melons are grown in the same place, the greater the losses are apt to be from this source.

The patch was irrigated a few times during June and July by running water in small ditches between the rows. Melons began to ripen August first, at which time irrigation was discontinued.

VINES ARE CLIPPED

As soon as the melons began to form and the vines had about covered the ground, the ends of the latter were clipped off, leaving at each hill a mass of vines about eight feet square. This pruning not only makes bigger melons, but also causes them to grow smoother and in better shape.

Ripeness is tested by thumping and by noting a rough, brown spot which generally appears on ripe melons. Pulling away any vines which may cover melons and "mashing down" the vines so as to leave the melons exposed to the sun as much as possible, promote the formation of sugar.

Ashland, a city of 5000, five miles distant, is the principal market.

The varieties grown by Mr. Rapp are too tender to stand shipping to Portland or other distant markets, while the price of poorer sorts is too low to justify the expense of supplying city customers.

VARIETIES GROWN

Kleckley Sweet is the principal variety grown. It is a long, green, thin-rind melon, with large, white seeds and red pulp, coarse and grainy, but very sweet. Small, black drops of syrup sometimes form on the outside of the melon, caused by juice which has escaped through tiny cracks and has partially evaporated.

This variety has been grown for many years by Fred Rapp and now attains much larger size than when first planted. A few years ago a slight strain of Jumbo—a large, round melon—was introduced by growing a few hills of the latter variety near by.

The Chilian is a smaller, round melon, faintly striped, which Mr. Rapp has raised for 15 years. Alabama Sweet was planted this year and proved to be worthless, having a thick, tough rind and a small quantity of stringy, tasteless pulp.

Burrel Green is the best muskmelon grown, being of good size, with sweet, thick, yellow flesh. The outside color, however, is green, which makes it difficult to sell until buyers become acquainted with its fine quality.

Miller's Cream is another good muskmelon. Montreal Market has been tried and found wanting. Honey Dews and Casabas are too late to mature in profitable quantities in this section.

PRINCIPAL PEST

Boys consider it a joke to steal and destroy melons, but it is no fun for the man who raises them. Mr. Rapp is always glad to give melons to those who ask for them. But at the beginning of the season boys are apt to destroy many melons in looking for ripe ones and by cutting open more than can be eaten.

The only effective remedy found for this pest is good, round buckshot, administered with a double-barreled fowling piece. Two armed guards watch the Rapp melon patch night and day, sleeping in a tent and cooking in a shed near by.

A former guard came in one morning with a weird tale of having been held up by robbers armed with machine guns and powerful flashlights, blinding the guard with the latter while they stole several truckloads of melons. The proprietor, however, was inclined to suspect collusion and is said to have given the intrepid guard his "walking papers."

Rapp "stakes" too much upon his melon crop to risk its loss, and therefore emphasizes the importance of timely "spraying" with buckshot when necessitated by the attacks of the destructive pest, "*Boyus Purkiness*."

Stop Thief!

Fred Rapp believes the most effective "spray" for the "two-legged pest" is a strong dose of buckshot. Above are shown guards who are employed to watch the melon patch. Center—A melon thief caught in the act. Below—Rapp in the field among his prize melons.

PRACTICAL POINTERS
IN FEW WORDS
for Busy Farmers

Bordeaux for Spraying Potatoes—Potato growers frequently fail to secure satisfactory results with Bordeaux mixture because of improper preparation of the material. The usual formula is 5 pounds of copper sulphate and 5 pounds of freshly-burnt lime, with 50 gallons of water. The copper sulphate should be dissolved, and the lime slaked separately, after which two are mixed. Copper sulphate dissolves best if put into bag and suspended in water. A little hot water should be poured upon the lime first. After it becomes active, cold water is added slowly until a fairly thin white liquid results. In mixing, at least one of the ingredients should be fairly dilute. In making up small amounts of the final mixture, the solution of copper sulphate should be poured into the lime milk. If this process is reversed, a thick, heavy sediment is formed which will not readily pass through the spray nozzle.

Wires for Bracing Fruit Trees—Many orchardists have hesitated about adopting the wire bracing method instead of the usual wooden props until experiments being conducted by the University were concluded. It is now announced that tests carried on for several years have demonstrated that wire braces are successful and frequently economical. The results of these experiments are incorporated in Circular No. 244, which may be secured by addressing the Director of the Agricultural Experiment Station, Berkeley. This circular describes the methods used under different conditions, lists the necessary equipment, and gives cost as compared with the use of wooden props.

Seed Purchasers Warned—A warning is issued to those who are purchasing or contemplating the purchase of **Melilotus indica** for cover crop purposes. A large amount of **Melilotus indica** is being marketed in California from Arizona. Much of this seed has been found by test to contain a large amount of Johnson grass seed. The seed of the Johnson grass has been hulled, thus making it very difficult to distinguish from the Melilotus seed. Purchasers are advised to submit samples to the Seed Laboratory, Department of Agriculture, Sacramento, for examination before the seed is purchased and planted.

Testing Consistency of Concrete—The Slump Test is the simplest and most practical way of determining the proper amount of water to use in mixing concrete, says the Portland Cement Association. The correct cement-water ratio for any concrete mixture will develop the maximum strength of the concrete. A knowledge of how to determine this ratio is a matter of importance to the builder. The slump test is a simple, easy, and practical method of making this determination. The only apparatus necessary is a special mold, made from sheet metal, preferably non-corrosive, in the form of a frustum of a cone 4 inches in diameter at the top, 8 inches in diameter at the bottom, and 12 inches in vertical height.

After thorough mixing, the concrete is placed in the mold in three or four successive layers, each layer carefully puddled or rammed with a blunt-pointed ⅝-inch round rod. The metal mold is then removed with a steady, vertical lift, leaving the concrete free to spread at the base. The "slump," or reduction in vertical height of the pile of concrete which results, is an indication of the consistency of the mixture.

The consistency which produces concrete of maximum strength is known as a "normal" mixture, and has a slump of about one inch. A [illegible] amount of water [illegible] below that required [illegible] mixture will change [illegible] only one-half inch, and decrease the strength of the concrete about 30 per cent. Increasing the water 10 per cent above normal will result in a slump of almost three inches, and a loss of at least 15 per cent in strength.

A portion of the strength of the concrete must sometimes be sacrificed in order to obtain the plasticity of mixture required by the manufacturing processes employed. For pavements, floors and large foundations, the slump should not exceed 3 inches. For thin, reinforced concrete walls where smoothness is required but compacting is difficult, a mixture with a slump of 6 or 7 inches is permissible because its wet consistency practically eliminates the necessity of tamping. Remember: Do not make your mixture more plastic than is required by the nature of your work, warns the Association.

Solving the Family Gift Problem—What better birthday present or wedding gift than purebred livestock? Many farm parents are finding enthusiastic response to this plan. With Christmas not far away, ORCHARD and FARM subscribers well may consider the benefits to be derived by interesting Santa Claus in the distribution of pigs, calves, colts and poultry! One prominent breeder relates proudly the fact that he received his "start" as the result of a present from his father-in-law. With the little gift herd as a nucleus, he has built up a profitable business—one which has contributed much to the family happiness and prosperity.

Prompt Action Necessary With Hog Cholera—Since cholera usually increases during the fall and early winter months, hog raisers will do well to increase their vigilance at this time. Watch for the first hog to show symptoms is the advice of veterinarians. If the rest of the animals are treated immediately, usually it is possible to save the herd with but few losses. If the disease, however, is allowed to reach all the animals before the serum preventive treatment is applied heavy losses may be expected. Anti-hog cholera serum is a preventive and not a cure for hog cholera. Whenever a hog dies of an unknown cause the owner should watch his herd closely for at least a week, and if any more hogs in the herd begin to show signs of sickness, a veterinarian should be called immediately, for the chances are that cholera has reached the herd and prompt action in applying the serum treatment is the only thing that will save the well animals. A high temperature, ranging from 105 degrees to 108 degrees F., in a hog that staggers when it walks, is a pretty good indication of hog cholera. Such hogs should be segregated and not allowed to mingle with others or to wander about, for they will spread the disease wherever they go, sometimes in places where it is impossible to disinfect. Hogs that die on the farm should be buried, or, preferably, burned, in order to prevent birds, insects and animals that visit the carcass from spreading the disease.

Clean Poultry Yards Now—With the fall rains comes a special problem for the poultry raiser. If pens and runways are not plowed up or at least scraped and cleaned, puddles of water defiled with manure are likely to collect. Many fowls will drink from stagnant pools even when clear water is available in a vessel, and it is believed much disease, especially bowel trouble, is traceable to this habit. It is suggested that all pens be first cleaned, then plowed or spaded, and spread with sand or clean soil. Good drainage, of course, should be provided in order to prevent the collection of water.—C. C. T.

Yolo "Gyp" Solves Harvest Problem—Expensive harvesting by hand methods, necessitated in California by irregular growth, has been the principle handicap in production of grain sorghums and kaffir corn. The new "Yolo" Egyptian corn, produced by the University of California, grows to a uniform height and carries erect heads. For this reason it may be harvested with machinery, including one-row headers, push headers and combined harvesters. California has about 40,000 acres of Yolo corn this year.

Fall Spraying for Pear Leaf Blister Mite—The observations by horticultural inspectors of results of various methods of spraying for the blister mite in the Antelope Valley during the past two seasons indicate that better results are to be expected from fall spraying in that vicinity than from applications in spring as ordinarily given. A dormant strength of lime-sulfur applied at that time in comparison with standard strength applied at the time that the buds were opening, showed a decided difference in favor of the fall spraying.

Pointers on Loading Freight Cars—"Load a freight car 10 per cent in excess of its marked capacity," urges the Association of Railway Executives, adding that if shippers had loaded cars properly during the first quarter of 1922, 137,822 less cars would have been required. The following additional rules are promulgated for guidance of shippers in helping to relieve the car shortage: Do not order more cars than can be loaded promptly. Load in one day, especially grain. Do not ship to glutted markets; to do so means delay in unloading or reconsigning. Load light weight or bulky freight to the full cubical capacity of the car, working a little overtime in the evening to finish loading. Do not use "free time." Do not reject cars for small defects which the station agent or his helpers can repair in a few minutes. Try to increase the loading of cars to a average of 30 tons from the present 23 or 24 tons.

"Reason Why" for Poultry Foods—Many poultry raisers who give the regulation mash as well as grain scratch mixture will be interested in the scientific explanation of the function and value of these standard forms of feed. The ground mash is necessary because birds putting on growth or producing eggs cannot assimilate enough nutriment from whole or cracked grains to supply the maximum requirements. On the other hand, the scratch mixture is necessary in order to give "work" to the gizzard and to keep the fowl in good health. And when it is fed in the litter or in automatic scattering devices, it has the added value of inducing exercise.

Spacing of Walnut Trees—In few Southern California walnut groves are the trees given sufficient space, according to a survey recently made by the California Walnut Growers' Association. It is asserted the trees should not be set closer than 60 feet apart. C. C. Teague, of the famous Limoniera Ranch, has announced that upon removing every other tree, he secured not only heavier tonnage but also better walnuts. He asserts that half the trees in many groves may be taken out—with profit to the owners. W. T. Webber, sales manager of the association, says that where walnut trees stand closer than 60 by 60 feet in the rows they do not get the necessary amount of sunshine and circulation of air. Association officials are agreed that if crowded groves are properly thinned, the net result for a year or two may be somewhat smaller than formerly, but the ultimate result will be greater tonnage as well as size and quality.

Hogs and Tuberculosis—It has been found that tuberculosis is transmitted to hogs in the following ways: Feeding raw milk and slime from creameries; feeding separated milk from tuberculous cattle; feeding tuberculous carcasses of various animals, including fowls; feeding uncooked garbage. If all these sources of infection are avoided by hog raisers, the percentage of swine tuberculosis will be greatly diminished. —Dr. J. P. Iverson.

Ben Gonnadooit Says

I've jest about reached th' conclusion there ain't no use strugglin' along no further, seein' as how th' cards is stacked ag'in me. I bin intendin' fer quite a while t' put my story in print as a warnin' t' others, but this is th' first time I bin able t' get around to it.

I sure have played in hard luck this year. In th' first place, my neighbor, Brown, broke his spray pump jest about th' time I was goin' t' borry it t' spray my trees, and result was they went unsprayed, an' I got a poor crop o' fruit. Then jest durin' the pickin' season, th' roof o' the bunk-house had t' cave in an' we had to stop an' fix it, this delayin' us so that we got some o' th' crop in on a bad market break. Now that there roof has been saggin' fer six years, an' I figgered it ought to go through one more season, but no—It had t' fall right when we was busiest. Well, I suppose I was lucky it didn't kill nobody.

Right on top o' that, while we was haulin' fruit, th' harness started t' fall t' pieces. Seemed like we'd no sooner get one strap riveted than another'd break. I had planned t' give it a general overhaulin' last winter, but somethin' allus p'vented. Well, at any rate, it had t' cause trouble at th' very worst time.

But th' last and final blow was th' worst of all. My wife was took sick. Th' doctor, instead o' givin' her medicine, like he should a' done, said all she needed was rest! What do you think of that! Right at th' time when we had five men t' feed! An' then he had the nerve t' send me a bill fer ten dollars.

So, takin' it all in all, I kain't see where a pore man like me, with heavy debts, kin ever get ennywhere. My advice is onless ye got lots o' money, or yer jest natcherly lucky, don't try t' raise fruit! Ye kin see how hard th' struggle has been fer me.—BEN GONNADOOIT.

Co-operative Credit Associations

Personal Credits for Farmers—Purpose and Value of Organized Borrowing—How It Is Done

ALTHOUGH co-operative credit associations in the United States as yet have advanced but little beyond the experimental stage, the results thus far obtained appear quite fully to demonstrate the possibilities of this form of self-help. The place of the associations in rural credits has been made the subject of special study by the United States Department of Agriculture, which has now issued Department Circular 197, The Credit Association as an Agency for Rural Short-Time Credit, prepared by V. N. Valgren and Elmer E. Engolbert.

Co-operative credit associations, and particularly those in rural districts in need of better credit facilities, are agencies supplementary to the commercial banks, rather than competitors. Many far-sighted and constructive rural bankers recognize this, and have not only co-operated with credit unions that have been formed, but have taken the initiative in the organization of such associations in their territory.

PROGRESS TO DATE

The rural associations, which to date are limited chiefly to North Carolina, have enabled their members to secure loans on favorable terms for the purchase of necessary supplies and equipment, when in the absence of such associations expensive merchant credit would have been the only alternative.

They have been helpful particularly among farmers in need of short-time credit who lack proper security or proper banking connections. The associations also meet a similar need among urban wage earners who occasionally desire a reliable source of credit as well as an agency of saving and thrift that will allow them a reasonable return on what money they are able to lay aside from the weekly or monthly wage.

All these associations, rural or urban, have stimulated saving among their members by reason of the relatively liberal rate of interest paid on funds deposited with them. The margin between the rate he receives on his surplus funds, when he has any, has been materially narrowed.

ORGANIZATION PLAN

As a rule the organization of the association is as follows: Regular membership is open to any man or woman in the community who has a good reputation. One share of stock of $10 par value, which can be purchased on the installment plan, gives the owner the same privileges as a member with 50 shares. Individual deposits are accepted in practically any amount, and vary from a few cents to several hundred dollars. Loans, however, show a narrower range, varying from perhaps $5 to a few hundred dollars. In North Carolina these institutions are as yet small. The largest amount of money which has been received by any one union from stock subscriptions and deposits is $23,000.

The lending capacity of any one of these unions from its own funds is, therefore, very limited. In general the banks have been very accommodating, however, and have lent to the unions at from 5 to 6 per cent interest. In obtaining a loan from this source the association gives its own note, signed by its officers, and deposits as collateral one or more notes of members to whom the association has made loans. Unless the association's by-laws provide a higher limit, the individual liability of a member for debts of the organization is an amount equal to twice the par value of the shares of stock held by him.

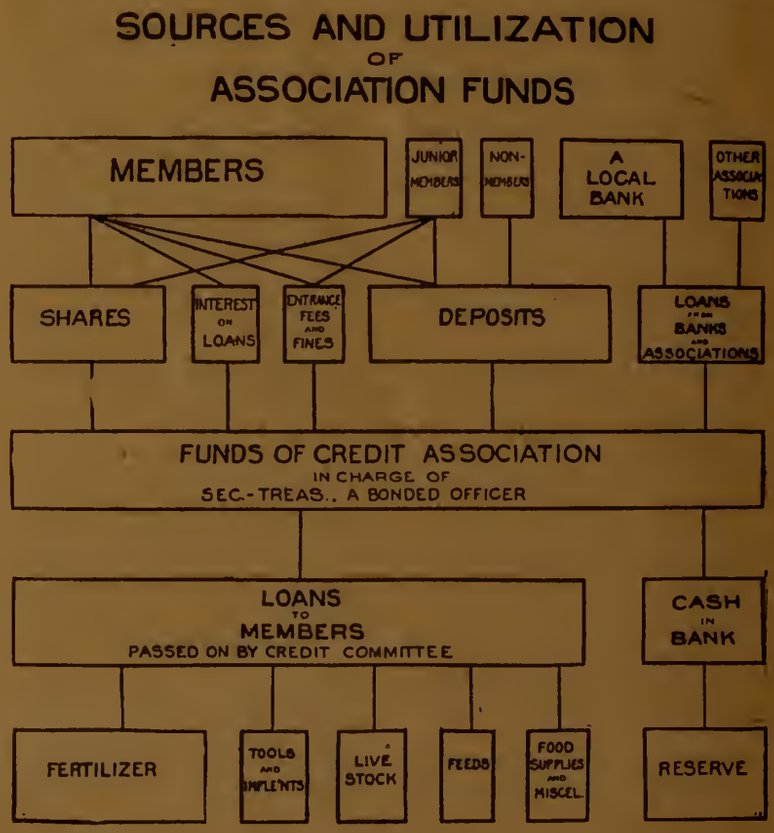
Fortunately, losses are practically unknown among these associations. Bankers, in fact, envy their record. A few of the unions in North Carolina have paid dividends, but most of them have added all earnings to their reserve funds.

The first step in the formation of credit unions is the enactment of a suitable State law. Such a law will be of little value, however, unless some agency is provided for informing the public concerning its provisions, and for directing and assisting those who desire to take advantage of the powers and privileges it extends. Ten States thus far have enacted laws permitting the formation of credit unions.

Further details concerning the associations, together with a draft of a suitable State law governing them, are contained in the circular, which may be had free by addressing a request to the United States Department of Agriculture, Washington, D. C.

IF THIS PLAN APPEALS TO YOU

URGE the enactment of a co-operative credit law in California. The idea is so simple, yet so far-reaching in its possibilities, that we may well consider the advisability of following the lead of 10 States which now have the necessary legislation.



Consider the Case of Richard Roe

A HARD-WORKING, honest young farmer is Richard Roe, striving to get ahead. As a tenant, he is struggling against rather heavy odds, and has not yet established bank credit.

Suddenly he is confronted with urgent need of a modest loan of $300. Either from lack of good business habits or because he rarely, if ever, has had any surplus funds, he has never been a depositor at the bank. Before extending the loan the banker faces two questions: First, has the prospective customer good business character? That is, will he, without quibble, promptly repay the loan with interest according to agreement if he is in position to do so?

Second, what productive ability has the applicant? Is there good reason to believe that he will use the borrowed money to such advantage that he will be able to repay the loan when due Both of these questions might be answered in the affirmative if the banker had the time to go out among the friends and neighbors of the prospective customer and get the facts.

But the loan is a relatively small one and the banker does not feel that he can take the time for a personal investigation. He, therefore, asks for security or indorsement of the note. The security offered does not seem very good and the indorsers suggested are also relatively unknown to the banker. He, therefore, concludes it unwise to make the loan.

Unable to secure the loan at the bank, the farmer goes to the local merchant. If he succeeds in securing the needed funds from this source, the terms are likely to involve an 8 to 10 per cent interest charge on the entire loan, even though only a part of the amount is advanced immediately. In addition, he must pay the cost of certain papers, including a crop lien or a chattel mortgage, or both. Furthermore, he is likely to be charged a price 10 per cent above the cash price on equipment or supplies purchased with the proceeds of the loan, because he is, after all, considered a credit customer.

The farmer described in the above illustration may, by energy and strength of character, and without co-operation from his neighbors, be able to rise above the condition in which he finds himself. However, through active co-operation with his neighbors he will find it not only far easier to improve his own credit status, but also he will assist and encourage others to improve their financial and economic situation.

One of the simplest and most practical forms of co-operation for improving the personal credit of those with limited security and without established banking connections is the so-called credit association or credit union, described in the accompanying article.

Los Angeles County Fair Looms

PREPARATIONS that for weeks past have been going on steadily at Pomona, now have culminated in a spacious exposition grounds, fully equipped for the long lists of exhibits entered and the thousands of visitors who are expected to attend. The fair will open October 17 and will continue for five days—a time of special attraction to farmers in the entire Southland.

EXHIBIT CAPACITY TAXED

In the industrial and agricultural departments, the exhibit capacity already is taxed practically to the limit. High-grade stock that does credit to leading Southern breeders will be shown, and keen interest has been taken in the various divisions, including horses, beef and dairy cattle, swine, sheep, goats, rabbits, cavies, and poultry. Prize herds of Holstein, Jersey and Guernsey cattle and of Duroc-Jersey swine are promised from a number of well-known ranches in Southern California.

It is said the Pomona fair will have the largest cavy show ever held in the United States, and new records are expected to be established by the poultry show, managed by Paul E. Kennedy. One of the features of the fair will be the livestock parade, giving an opportunity to view many of the finest farm animals at one time.

NO PAINS SPARED

The fair committee has spared no pains in the making of the new racetrack, which is now receiving the finishing touches under the personal supervision of Vice President C. B. Affierbaugh and which will be in perfect condition for the four days of racing. At night, in front of the big new grandstand, will be held the horse show, which will feature some of the finest gaited and exhibition animals on the Coast.

The outstanding attraction of the Los Angeles County Fair is that every department will have something intensely interesting and worth while to offer.—E. M. Gore.

EDITORIAL DEPARTMENT

Timely Topics among Farm Folk

James C. Knollin, Managing Editor

Agriculture—Fundamentally First

OCCASIONALLY some one with more venom than vision attempts to belittle the economic importance of agriculture. And it is easy for the average city dweller—living out of contact with the farmer, surrounded by superficialities, and absorbed in his limited sphere—to lose his sense of proportion.

It is no wonder, then, that the farmer doesn't get a square deal unless he fights for it. Most of us are slaves to environment. And those who move in a small world of finance, factories, middlemen, merchants and corner grocery stores are apt to forget how dependent they are upon the tiller of the soil.

The true situation was set forth lucidly in a recent article by J. V. Mendenhall, prominent San Francisco business man, land developer and capitalist, which appeared in the San Francisco Daily Financial News.

"Agriculture," Mr. Mendenhall points out, "produces most of the raw material—the original wealth which is the basis of prosperity, including that of our city population. Other industries play relatively small parts in the aggregate production of new wealth and lack the possibilities of agriculture for expansion."

The writer then draws a graphic picture which should open the eyes of any city dweller who imagines he could get along without the farmer:

"Lest the basic importance of agriculture be not fully grasped, just estimate for a moment the profits and earnings the urban population takes from the various kinds of farm land products as they are shipped, processed, stored, exported, wholesaled, retailed, financed and insured. The makers of containers, the telephone and telegraph companies, warehouse owners, packing corporations, city office buildings, brokers, commission men and dealers, exporters, bankers, and even physicians and attorneys—each takes a toll as our farm products are gradually distributed into the hands of the consumer. Stop the farmer production, and the tremendous investment in city office skyscrapers, ornate bank buildings, miles of residences—all would become worthless, and the city man's prosperity would vanish."

These facts cannot be too constantly emphasized by farmers and farm organizations. There is no reason why the producer need lack the heritage that is his by right; no reason other than his own lethargy. The world accepts a man largely at his own valuation, provided the valuation is based upon fairness and truth. "The truth shall prevail" about agriculture. Why should not the farmer hold his head high?

Avoiding Market Gluts

THOUSANDS of dollars are lost to California producers without any saving to the consumer, through haphazard sales methods and unwise dumping of crops upon a saturated market. This applies particularly to certain vegetables, including potatoes, and to other products not handled through associations.

In Southern California, for example, 25 to 30 carloads a day of potatoes are consumed the year 'round, it is said. This is a greater quantity, by hundreds of tons, than is produced in local potato districts, meaning that many carloads must be brought in from other sections.

Yet, during the height of the season, potatoes are dumped upon the Los Angeles market in such quantities that dealers are unable or afraid to handle them, and actually there results a disastrous drop in price, which might be avoided by more intelligent handling.

The growers need better storage facilities, according to those who have investigated the situation, and in the case of potatoes, no expensive equipment is necessary; frequently only financial support.

Just such conditions as this emphasize the value of marketing associations which, with control of the larger share of the crop and strong financial backing, can so regulate the supply as to meet the demand "half way."

Even the ultimate consumer to benefit by the farmer's [illegible] situation still would be bad enough from the producer's point of view, but as a matter of fact, the buyers and speculators who have storage facilities usually reap the harvest that might go to the farmer.

Few individuals can afford the time or expense necessary to keep constantly posted upon the entire market situation. This is the vocation of the marketing expert, who has direct contact with the trade and the broad outlook necessary for intelligent distribution.

Hunters and Fires

A VIGOROUS and (we think) well-deserved criticism of hunters whose carelessness causes so many disastrous forest fires, is forwarded by Charles H. Shinn, Forest Examiner.

"When a man loves hunting so much that he spends hours in making ready and hikes for the mountains so as to get the first shot of the season," says Mr. Shinn, "he is apt to neglect the responsibilities in every other direction. Therefore, the "graphs" which show the curves of increase in fires in our National Forests always exhibit a frightful rise during the first week of each hunting season.

"The excited 'first crop' of hunters must take most of the blame for the sudden September rise in fire losses. Some of them tramp all day and make hasty camps, then are tired and consequently careless. Others drop matches and cigarette stubs. But underlying such things as these are city environment, short vacations, ignorance, laziness, excitement and plain don't-care-anyhow."

Examiner Shinn's statements deserve careful consideration. And city hunters are not the only ones who start fires, although it must be said in all fairness that the countryman as a rule is much more careful. But there is opportunity for improvement all along the line. And since it is the farmer who suffers most from deforestation of water sheds, he should give all possible aid in the campaign for fire prevention.

Important Livestock Event

NOVEMBER FIRST will be an important day for Los Angeles and for the livestock men of the entire West. Then will occur the formal opening of the Union Stockyards, upon which a small army of men has been working for several months.

The first unit of the "Yards" comprises six acres, and includes accommodations for 5000 cattle, 2500 hogs and 2500 sheep. A complete "belt-line" railway, owned and operated by the stockyards company, has been constructed.

Los Angeles owes its entry into the "big market" field jointly to the vision of far-sighted local business men, the backing of the Chamber of Commerce, and the enterprise of the Chicago capitalists who have "put over" the big undertaking.

Thus is the "Angel City" widening its sphere of influence and taking another step towards the destiny predicted by its justly famed boosters!

The stock raisers of all the Western States will be affected, directly or indirectly, by the establishment of the Los Angeles market. And unquestionably its influence and volume of trade will grow, year by year.

ORCHARD and FARM

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October Orchard Suggestions

By George P. Weldon
CONTRIBUTING HORTICULTURAL EDITOR OF ORCHARD AND FARM
POMOLOGIST, CHAFFEY JUNIOR COLLEGE OF AGRICULTURE

Selecting Varieties for the Orchard

PLANTING season for fruit trees will soon be with us again, and those who are contemplating the setting out of an orchard would do well to stop and think over some of the things that should determine the selection of varieties to be planted.

It is not the intention of the writer in this brief article to discuss the many varieties of fruits, but rather to dwell upon some fundamental facts that are easily overlooked in the hurry and worry which often attend the planting of orchard trees.

SUCCESS DEPENDS ON VARIETY

Nothing is more important in determining the success of any orchard enterprise than the varieties chosen. Misfits are to be found everywhere in our orchards and often the ground upon which they stand would be more valuable without them. Recently the writer was called upon to look over a certain orchard property and after doing so to venture a guess as to its probable value. Without knowledge of the varieties in this case, one might have been tempted to place a much higher valuation on the property than was justifiable with a fairly accurate knowledge regarding them.

The property is well located near a main highway, in a section where irrigation facilities are of the best. The soil is good, as the splendid size and health of the trees indicate — but one thing is wrong:

Varieties of peaches are growing on the place, which during the present season are selling for from $20 to $30 per ton, while the best varieties are bringing twice that amount. If the income from an orchard property is half as much when certain varieties make up the planting as it would be if other varieties grew in their places, it is easy to figure the difference in valuation under the two conditions.

Certainly, then, no one is justified in planting until the market merits of the varieties of the kind of fruit have been determined.

A FEW GOOD VARIETIES BETTER THAN MANY

In most orchard sections of the country the experimental stage with respect to varieties has passed and one can safely judge what to plant by the past history of varietal behavior in that section.

And let us not forget that each section has its individual peculiarities which must be taken into consideration. One section may be ideal for a certain variety and another section a failure for the same variety, because of a little difference in soil, elevation, moisture or climate.

A careful investigation of the varieties growing under conditions nearly identical with those which pertain where planting is to be done is always desirable. When the facts are known and certain kinds can be depended upon to do well, these are the varieties to choose for the main planting, and if new things are to be tried, let them occupy a very small part of the planting until they have proven their worth.

THE HOME ORCHARD

Commercial orcharding should not be confused with the small home orchard proposition. In the latter case it is desirable to have many different varieties ripening regularly as the season advances, but commercial success depends largely upon the ability of the orchardist to deliver in quantity a superior type.

The choice of varieties then resolves itself into a question of finding first of all what varieties are adapted to the conditions where planting is to take place, and then choosing two or three of those for which the market will pay the highest price. This type of fruit growing, which follows the beaten path in planting, is considered the safest. Yet it does not appeal to some, who are ambitious to depart from the general custom and do something different.

The growing of a new or little known variety, or perhaps something that is well known elsewhere but not in the immediate locality is sometimes attended with great success. But most persons succeed best when they can follow well established methods. A program of work, prepared by those who have been engaged in fruit growing of a certain kind for years, is not difficult to follow, but it may be more difficult to depart from that program in the growing of something new, and later to find a market for a product that cannot be handled with the main crop of the community in the ordinary way.

VISION IS REWARDED

Yet a good thing will usually sell itself and the man who has vision and good judgment stands a good chance of becoming a successful grower.

In choosing varieties of any kind of deciduous fruit for planting, it is important to consider cross pollination. The information on the subject is not as complete as could be desired, considering its importance. In recent years, however, the University of California has published some valuable bulletins on this subject, and in the case of pears, plums, almonds and cherries at least, much valuable information is available for the prospective planter.

As a general rule, it is unsafe to plant any variety that requires pollination in large blocks by itself, and while it is not always possible to find out which varieties will interpollenize and which will not, less chances are taken when two or three varieties are mixed in the planting of the orchard.

While most of the points of this article may seem elementary, they are nevertheless vital and less failures in the fruit business would result if some of them were heeded more closely when the orchard is planted.

Bean Straw in a Southern California Orchard

Because of its high nitrogen content, its low cost, and its ready disintegration in the soil, bean straw is finding constantly increasing usage as fertilizer. In certain types of soils its humus-making quality is especially valuable. Above are shown bales of straw just dumped from a truck at the end of an orchard row in San Bernardino County.

The Jujube—A Promising New Fruit

CALIFORNIA'S soil and sunshine favor the production of a great many different kinds of fruits. In fact, few fruits are known that could not be grown somewhere within the borders of the State, and the long list of those which have already added to her fame will be increased as the years go by in the addition of new and little known products.

Few persons at the present time know the jujube, but it will not be many years, unless all signs fail, until this fruit will occupy a place as prominent as that now held by such fruits as the olive, fig, date and walnut.

A visit to a Chinese confectionery store should familiarize one with this fruit, grown in China for thousands of years, and it is said that from 300 to 400 varieties are now produced in that country.

It is a fruit which closely resembles the date, but which has a flavor of its own. Those who know it think the quality is fully as good as that of the date. The tree upon which it grows, however, is very different. It belongs to the family of plants known as *Rhamnaceae*. In this same family is found the bush known as *Cascara sagrada*, which possesses well-known medicinal properties. The trees are said to attain a height of from 30 to 50 feet. They are highly ornamental and the twigs have fine thorns which make them rather "prickly."

ORIGIN OF JUJUBE

According to G. P. Rixford, who first introduced the jujube into California, there is every reason to believe that the tree is native to Syria. It is now grown in Italy, France, Spain and Portugal, as well as in some of the North African States and Asia.

Rixford states that Robert Chisholm of Beaufort, North Carolina, first brought the tree to America, while Mr Rixford himself brought it to California in 1876.

The original tree is still living in the Sonoma Valley. It is said to be about 25 feet tall, with a trunk diameter of from 8 to 10 inches. Heavy crops of fruit are borne annually.

VARIETIES

Apparently there are many varieties of the jujube that are small and of

little value. The Chinese varieties are [illegible] to be of a good size, although a little inferior in quality to the European varieties. Frank N. Meyer, who for years was a collector for the office of foreign seeds and plant introduction, U. S. Department of Agriculture, succeeded in securing some of the finest Chinese varieties, which are now being grown experimentally at the U. S. Plant Introduction Gardens, Chico, California.

George P. Weldon

Experimental plantings have been made also in various places, with trees furnished by the Bureau of Plant Industry, and it is only a question of a few years when much valuable data will be available.

Considerable encouragement regarding the possibility of propagating varieties of good size may be found in the claim that one variety has fruited at Chico which produces fruit as large as an average hen's egg!

FRUIT EATEN FRESH, DRIED OR CANDIED

The fruit of the jujube is very palatable when allowed to ripen and dry on the trees. Ripening takes place rather late, about October or November, in California. When the fruit is processed by boiling in syrup, as in the candying of fruits, a most delicious confection equaling the finest dates is procured.

PROPAGATION

Jujubes may be grown from seed, cuttings or offshoots. Soft wood cuttings are said to be more satisfactory than hardwood. The trees have a tendency to develop sprouts which may be used as offshoots for planting. Budding or grafting of the best varieties into seedling trees also may be practiced.

BEARS EARLY

Young trees that were planted last February in the experimental orchard of the Chaffey Union High School at Ontario are bearing fruit already. From this it may be seen that the trees come into bearing very early and there is every indication that they are extremely prolific.

ESCAPE SPRING FROSTS

There need be no fear of losing a crop of jujubes from frost, as they do not begin growth until all other deciduous fruits are well started and have set their crops of fruit. Blooming is still later, as the blossoms do not develop until after considerable growth has been made. Blooming then continues for weeks. Trees in the Chaffey orchard which began blooming in April still had some bloom in the early part of August and fruit was still setting.

NO COMMERCIAL PRODUCTION IN CALIFORNIA

At the present time there is no commercial production of any consequence of the jujube in California. Therefore there has been no chance to test its market value. Like all new things it will have to become known before it will sell. Its wonderful quality will without doubt favor its ready sale.

TRIAL PLANTINGS DESIRABLE

While it would not be wise for any one, on the strength of what is known about the jujube at present, to make [illegible] plantings, it is so promising that no one could go far astray in putting out a few trees or a few acres [illegible] in order to hasten the day of commercial planting. Those who are familiar with this fruit feel assured [illegible] demand eventually will [illegible]

[illegible] BETTER—Please find enclosed one [illegible] for my subscription. I would not [illegible] of being without ORCHARD and [illegible]. I think [illegible] is none better.—Mrs. [illegible] Calif.

[illegible] GRATITUDE—I have been receiving [illegible] years and like [illegible] good out of it.—[illegible]

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California ranchers, already provided with more and cheaper power than the farmers of any other state, are assured ample electrical energy for their need —*and at the lowest rates possible to produce it.*

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Double Cropping With Oranges and Eggs

To Insure a Good Setting of Fruit, Keep a Hen to Each Tree, Says Edward Insley

THIS Southern California citrus grower has promoted a most profitable partnership between the White Leghorn hen and the Valencia orange. The fame of his interesting project has spread even to Europe. While Dean Hunt of the University of California Agricultural College was abroad as a delegate to the International Institute of Agriculture, he was requested by Henri Girard of Paris University to furnish photographs and description of the Insley ranch for inclusion in a French textbook. Mr. Mason's article explains clearly the efficient, labor-saving system which has resulted in such successful intermingling of fruit and feathers.

—The Editor.

By Albert J. Mason

THE "cat and rat farm" of humorous fame has a more business-like parallel at Covina, Los Angeles County, California, where Edward Insley for several years has maintained a combination citrus and poultry ranch.

Mr. Insley keeps hens to furnish "food" for his trees, and the trees, of course, supply the means of buying food for the hens. But unlike the cat and rat combination, which gave but one source of income (the pelts of the cats) and which, therefore, may be regarded with suspicion as a "skin game," the Insley ranch has two sources of income—oranges and eggs. Thus the enterprise comes about as near to being a "sure thing" as any branch of that great "gamble" known as Agriculture.

So minutely have the details of the enterprise been developed that risk, expense and labor have been reduced to a minimum. In fact, the care of some 400 hens is entrusted almost entirely to the owner's 10-year-old son, who is paid regular wages for this investment of his spare time. And on the basis of a hen to a tree, sufficient fertilizer for five acres of oranges is produced.

GOOD SUPPLY OF FERTILIZER

An ordinary hen, says Mr. Insley, voids nearly 75 pounds of manure annually. The droppings, however, are not applied directly to the land in the raw state. Gypsum is spread over the dropping boards, and by means of an overhead track litter carrier, the mixture is conveyed at each cleaning to a screened manure pit.

But the production of fertilizer does not end with this process. Instead of ordinary litter, bean-straw is used on the floors of the laying houses. And the daily scrapings from the dropping boards for one week are mixed with 160 pounds of this straw, removed from the houses at the weekly renovation.

APPLYING TO ORCHARD

The mixture of manure, gypsum and bean straw is allowed to accumulate in the screened compartment for several weeks, being hauled into the orchard six or eight times a year and well scattered about the trees and between the rows.

"Poultry manure is a very rich, concentrated fertilizer," warns Mr. Insley, "and I do not believe it should be applied directly in large quantities to the orchard. Especially do I discourage the use of the trench system for the concentration of this kind of manure about the base of the trees.

"The gypsum is a good absorbent, insuring the salvage of all liquids; furthermore it is of value in correcting certain soil conditions. Its sulphur content I believe to be even more important than is generally realized. It is comparatively inexpensive and is more easily applied to the dropping boards than sand."

The value of the bean straw as a source of nitrogen and humus also is emphasized. Because of its leguminous quality, the straw of the bean is particularly rich in nitrogenous material, which disintegrates quickly and soon increases the humus content of the soil.

The effect of the sulphur is especially noticeable in the small patch of alfalfa on the Insley ranch, maintained for constant production of green feed for the hens. An unusually high yield is obtained. The alfalfa is chopped in a power-driven grinder. During the winter months barley is grown. Mr. Insley believes heartily in the necessity for supplying plenty of green stuff.

Especially is this true, he points out, where the hens are kept in close confinement, as in his highly-concentrated plant.

"I have come to believe that poultry should either be closely confined or should have free range," he asserts. "There does not seem to be any profitable compromise." No runs are provided for the insley stock, they are held constantly within the laying houses, in order to prevent scattering and consequent loss of manure, as well as to conserve space.

CONSTRUCTION OF LAYING HOUSE

The laying house consists of units, 20 by 20 feet, each accommodating 125 hens. Four units house sufficient hens for five acres. The units are arranged consecutively under one roof, with doors between through which the litter-carrier may be run. The roosts are hinged at the rear and may be raised for cleaning the dropping boards.

Under the roosts and opening at the rear are the nest compartments, reached by the attendant through hinged openings at the front.

Above—Interior of laying house, showing (A) container for scratch mixture; (B) overhead track for litter-carrier; (C) dry mash hopper; (D) roosts. Bean straw is used for litter. Below—The poultry house in the orange trees. Note adjustable shutters over screened front, for shade and ventilation.

VENTILATION IMPORTANT

Ventilation is accomplished by means of windows in the rear wall of the house, the air being carried above the roosts through a double ceiling and discharged so as to protect the birds from drafts. Mr. insley does not believe, however, that it is necessary to extend the air space down the rear

General view of ranch buildings, showing dwelling at left. On the right is granery, with laying houses connecting. The white spots at rear of laying houses are windows provided for ventilation beneath roosts. Top ventilation is provided by double roof constructed above roosts.

wall behind the roosts, as is frequently done.

Automatic drinking fountains, large mash hoppers, and grain feeders operated by the hens for scattering the scratch mixture, complete the equipment. The front of the house is screened and provided with protection in damp or windy weather.

Electric lights are turned on at 4 a. m., during the winter months.

ELECTRIC LIGHTS ADVOCATED

"The use of lights undoubtedly increases egg production during the winter season," asserts the owner. "But each hen seems capable of producing just so many eggs per year, and I believe will show a corresponding falling off in egg yield during the late season. However, it is good business, of course, to get more eggs when prices are higher, and, even though the hens molt a little earlier, poultrymen appear justified in the use of lights, for it seems apparent that no permanent injury results."

Asked whether he raised his own stock, Mr. Insley pointed to a well-equipped brooder house, with stove, which bore evidence of long disuse. "I have come to believe in specialization in the poultry business," he declared, "and I know now that I can save money in the long run by purchasing young pullets from a commercial breeder, doing away with the trouble, loss and expense of raising baby chicks."

The flock is culled regularly and young stock for replacement secured from breeders known to have high producing strains.

A commercial mash mixture is kept constantly before the birds and they are fed the same scratch mixture the year 'round—whole barley, wheat, and cracked corn, one-third each. Two pounds of tobacco dust is added to every other batch of grain, as a worm preventive.

HEALTH OF THE FLOCK

The Insley flock is unusually healthy. The owner attributes their freedom from chicken pox to close confinement, expressing the belief that this common communicable disease is spread by birds of the air, which enter the open runs used by most commercial egg-producers.

The houses are sprayed regularly with disinfectant. Mr. Insley recommends hanging roosts as protection against mites, which gain access to the birds at night by way of the dropping boards.

Permanganate of potassium is added daily to the drinking water at the time of cleaning the fountains.

It will be seen that the Insley poultry plant embodies many of the best features of various other types, and in addition includes a number of unique and original ideas. The costly and tedious labor incident to other systems of close confinement is eliminated, and at the same time the disadvantages of open runs are done away with.

The flock furnishes all the fertilizer for 5 acres of the 10-acre orchard and in addition pays a profit that helps to tide the orange trees over the occasional "bad years" that are inevitably encountered. Here indeed is a ranch where the eggs are never all in one basket, and where as long as the profitable partnership continues, neither trees nor hens need decline in productivity.

A Little Land Goes a Long Way

Article II—Secrets of Success in Producing Intensively

By Charles Weeks

THE "little land" theory is not a new one. But we in America are just beginning to realize what European nations have been forced by circumstances to learn. Density of population demands high per-acre production, but the same principles may be applied to increase the joy of living.

For generations in the Netherlands families have lived upon the produce of one acre or less. Little farms on the Island of Guernsey frequently net the owners as high as $2500 an acre. Pure-bred stock and careful cultivation have made Guernsey and the Isle of Jersey, as well as the Holstein district in the Netherlands, world famous.

The little islands of Japan, with adverse conditions of climate and topography, are made to feed millions of people without waste.

To be sure, there is no necessity of lowering our standard of living to meet that of foreigners, for in California natural conditions are so favorable that a much greater income may be produced with less effort. But the westward trend of population, many students of economics believe, is destined to make this State eventually the most densely populated place on earth.

The fertile, sheltered valleys of California, watered by the mountain streams, make a sure foundation for a successful little farm, with poultry, berries and fruit. The California climate, making it possible to grow a home garden and greens for poultry all the year, is the factor that makes it the choicest place for a "natural home." Rich soil, superabundance of irrigation water, unexcelled climate, and a world market through co-operation, are some of the essential advantages in California.

Colonies of "little landers" have been attempted by theorists, dreamers and impractical men on poor soil and without irrigation. The vision of "a little land and a living" is an inspiring one, and today this vision has come true because it has been worked out in a practical, common-sense way.

The secret of intensive production is high fertilization, with abundant water for irrigation. To grow tremendous crops requires a high state of fertility. Land must be replenished after each crop. The mistake that the American farmer has made is to take crop after crop off the land without adding fertilizer. Most farms are depleted. This is the reason why many farmers are failing. They attempt to carry too much land. If they could bring to the highest state of fertility only as much land as could be intensively cultivated they would save energy and make a sure profit.

Livestock raising is the most profitable of all branches of farming, because with livestock the fertility of the farm is kept up. Poultry raising is the most intensive of all types of livestock farming, because more stock can be kept per acre. A poultry farmer can start into business with the least possible investment in land and make an acre produce more than with any other method of farming. A one-acre poultry farm will give one man all he can do without being overworked.

Without fertilizer, the intensive little farm is a failure. With poultry, the little farm has a fertilizer factory to draw from that enhances the fertility year after year. Thus the production of one acre increases until the results are astonishing. Kale, beets, chard, cabbage and alfalfa for green feed for poultry can be produced in prodigious amounts on a very little space with high fertility and abundance of water.

The famous poultry colony at Palo Alto, Calif., where more than 200 families are living on one or two acres each, is a community of intellectual American people, proving beyond the shadow of a doubt the possibility of achieving independence upon one acre.

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"Bob" Jones' Corner
Little Stories of Farming

By Robert E. Jones

CONTRIBUTING EDITOR OF ORCHARD AND FARM

Brim Wins Again—John Brim, formerly of Butte City Ranch and now with Miller & Lux at Los Banos, won the sheep dog competition at the State Fair this year with his imported dog, brought to this country from the north of Scotland. George Phillips, of the University Farm at Davis, also with an imported dog, was the principal competitor. Phillips' dog finished first but made a few bad breaks. Brim won because he had better control of his dog. Brim was the victor last year. This Scotch shepherd is an interesting character and has spent so much time with his dog that he can control it almost as completely as he can control himself. These Scotch sheep dogs are truly remarkable animals. It is said that two bands of sheep can pass each other in a narrow lane in Scotland and that the dogs will keep them entirely separated. They are "one-man" dogs and do not readily make up with strangers. If separated from their masters, frequently it is said, they pine away and die.

Robt. E. Jones

Holding Hearings—The commission appointed by the last State Legislature to investigate the California College of Agriculture with the view of suggesting a better plan of organization, has held several hearings in California in order to learn opinions of farmers. This commission recently returned from a visit to the East and North, during which it investigated several of the most important agricultural colleges in the United States. In the meantime, several important changes have been made in the College of Agriculture, chief among these being the starting of freshman students at the University Farm, Davis, instead of at Berkeley. At Davis these first-year students get practice as well as theory during their first two years of work. Formerly they took two years of theory at Berkeley, then one year of practice and theory at Davis, and then finished at Berkeley. Now they are learning how to harness horses and to milk cows, while getting the fundamentals.

Weldon at Fair—George P. Weldon, better known in the Southland as Professor Weldon, one of the leading horticultural authorities of the United States and Associate Editor of Orchard and Farm, was judge of agricultural exhibits at the State Fair this year. Weldon is a man who has gained an enviable standing in California because of the fine quality of his work in behalf of the fruit industry. He came to California from Colorado and two of his principal books since his arrival in this State have been on the apple and the pear.

He Started Refrigeration—There is a quiet, unassuming man, who dislikes being interviewed, now enjoying the California climate, to whom the fruit industry of the Golden State owes a great debt. This man is George B. Robbins of San Francisco, formerly vice president of Armour & Co. and now president of the Sutter Basin Company. It was George B. Robbins who developed and organized the refrigerator car service which has made it possible to ship fresh fruits under ice to distant points. At the time the idea was conceived, P. D. Armour was living and was head of Armour & Company. The original purpose of refrigeration was to provide a means of transporting dressed beef from Chicago and other marketing centers to outlying districts. But as the refrigerator car lines expanded, they offered a way to market fruits as well. Today the average fruit man takes the refrigerator car as a matter of course. But a little thought will show how serious would be the predicament of this great fruit industry without refrigerator service. Shipments of fresh fruits would be confined to short distances. This year, it is probable that 100,000 carloads of citrus and deciduous fruits will move from California in refrigerator cars, not to mention the vast quantity of perishable vegetables. Judge Peter J. Shields of Sacramento is fond of saying that the introduction of a new and better strain of livestock has more beneficial effect upon a community than all the bombastic words of politicians for a generation. Yet, how much greater effect in accelerating the progress of humanity has been the work of the man who developed and organized refrigerator transportation for fruits, vegetables and meats!

Out-Guessing the Ducks—Martin Hansen, who is "farming" nearly 1000 acres of rice in Sutter County, informs me that he has solved the problem of keeping ducks off his rice fields. It is a simple solution, if he is right, but it depends upon having good, level land that will get an even stand. Hansen's field is as level as a billiard table and the soil is uniformly rich. There is not a spot in this 1000 acres that is bare of rice. The result is that from above it looks just like a lawn and no water is shown. Ducks must see water to attract them, Hansen says; in other words, the lake is their landing field, just as a wide space of smooth unobstructed land makes a landing field for airplanes. Hansen says that thousands of ducks pass over his rice field each day, and alight in ponds beyond. They approach the edge of his field, but so far none has discovered that there is water below the green. The progress of the season will tell whether or not he is right in assuming that he is to be entirely free of the duck menace.

New Grape Varieties—Much interest was evidenced at the State Fair in the University Farm exhibit of new varieties of grapes. Perhaps this exhibit should be credited to the California Experiment Station, for it belongs to that branch of the institution at Davis which is a combined school and experimental farm. The Yolo County exhibit, also, contained some of these new varieties. There were a number of crates of Corinth grapes, which are the "currant" of commerce, used in pastry and now largely imported from Greece to this country. Authorities say there is no reason why California should not dominate this trade, and have urged the planting of commercial vineyards of Corinth grapes in this State. The berries are tiny, much smaller than any commercial variety now grown and are syrupy in sweetness.

(ORCHARD and FARM has published a

number of articles on the Corinth or "Zaute" grape and was the first California farm journal to point out the wonderful possibilities in currant growing. —Editor.)

Standardizing Peaches — A definite movement is under way to standardize the commercial varieties of canning peaches raised in California. Particular interest in the move is evidenced in Sutter County, which is the leading county of California for the growing of cling, or canning peaches. Stephen W. Cunningham, manager of the Southern California Canners' Bureau, and Harry P. Stabler, Horticultural Commissioner of Sutter County, recently held a conference on the subject, the outcome of which will be a state-wide meeting in which the following-named organizations will participate: Canner's League of California, California Canners' Bureau, California Nurserymen's Association, Nurserymen's Bud Selection Association, U. S. Department of Agriculture, State Department of Agriculture, University of California, Chaffee College at Ontario, horticultural commissioners of peach counties, and individual peach growers. Some of the men who are expected to take an active part in the move are Professor George P. Weldon, of ORCHARD and FARM, Professor A. D. Shamel of the U. S. Department of Agriculture, who made such a success in citrus bud selection work, Frank Diron, now associated with the canners' league, and C. D. Weeks of the Nurserymen's Bud Selection Association.

The Dog Show—The dog show is becoming an increasingly attractive feature at the State Fair. The show opened this year on Thursday and ran for the remainder of the week, attracting wide attention. There were utility dogs, pet dogs and toy dogs. An unusually fine showing of Airedales was made. Of interest to the farmer was the large number of greyhounds, a breed which is quite useful in protecting growing crops against jackrabbits.

Texans Get Together—Three Texas men, whose paths had not crossed for years, had a reunion in Sacramento during the State Fair. All formerly were classmates and instructors at the Texas College of Agriculture and Mechanic Arts. They were John Burns, who came from Texas to judge beef cattle at the State Fair, Robert F. Miller, now one of the big men of the Animal Husbandry Division at the University Farm, Davis, and James C. Dean, architect, who is in charge of Sacramento's $5,000,000 school building program. All have had a career which has more or less to do with agriculture, although Dean's work has taken a general turn in architecture. While Assistant State Architect, however, Dean designed the famous Napa State Hospital group of dairy buildings which have become nationally famous for their beauty and practical and sanitary arrangement.

Sale Makes Good as Fruit Grower—Ritchie Sale of Red Bluff is doing well. He now has a magnificent young peach orchard across from Red Bluff on the bank of the Sacramento River and it is safe to say he could cash in for many times what he was worth a few years ago. Sale was until recently president of the Tehama County Farm Bureau and a very active man in semi-public affairs, but getting this peach orchard going has taken most of his time lately. He came to California from Virginia, a traveling expert for the U. S. Department of Agriculture. He married in Sacramento and found a helpmate, formerly Miss Mary Lindley, who was willing to go out on the farm with him. Sale spent a brief time in the wholesale grocery business, but his travels kept constantly before him the opportunities California agriculture offered. Finally he bought a place near Red Bluff. He was pioneering at first. Grain crops were grown. Sale was the first man to introduce new varieties of barley in Tehama. His seed was distributed to many parts of the state. But his mind always was on fruit and now the young peach orchard is a going business. The Sale home is the favorite "show place" about Red Bluff—the ranch to which the Chamber of Commerce secretary directs visitors. A few months ago Robert Bruce Terhune, the famous author, spent a fortnight there getting atmosphere for one of his [illegible]

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The Science of Apple Picking

By H. C. Bateham

THAT "anybody can pick apples" is a common conception. With this statement, however, I disagree heartily. Apple picking is, or should be, a business, very dependent upon experience. I have attended the apple-picking course in the School of Experience for about 40 years.

H. C. Bateham

From the haphazard methods employed by the average Eastern grower to the present-day practices of Western orchardists is truly a far cry.

But even here in the West we have apple snatchers, apple shakers and apple droppers who should immediately be reformed or "fired" before further damage is done. An inefficient or careless picker can do more damage than he is worth.

Early varieties should have two or more pickings, because all specimens do not ripen at once. This is true also of some late varieties. Leave the smaller uncolored and immature apples even as late as November 15 in this climate and you will be surprised to see how they will develop from culls to fancies and extra fancies in a few weeks.

PRUNING AN AID

Pruning, if one only stops to think of it, has a great deal to do with ease in picking. The lower branches must give space for the picker to climb into the center of the tree and between the outer branches room must be found to erect the ladder toward the center so as to reach the top. The tops of some varieties should be "shortened in" sufficiently to keep them from shooting out beyond reach and to force outside branches and fruit spurs.

ABOUT LADDERS

The fastest and cheapest picking is always done from the ground, and even with ladders, a very marked difference will be seen between the man using a six-foot ladder and the one using a ten-foot.

Topping, or picking the big specimens from the top of the trees either with a tall ladder or from the tree is worth twice as much and should be paid for accordingly.

Very few apples are picked with the extension or cherry ladder.

Of the step ladders the 4-legged ladder is objectionable.

Of the 3-legged ladders I prefer those with a step at top and with "flaring" lower step. In setting the ladder on side hill, care must be taken to face it either up or down hill to avoid tilting sidewise. The latter is preferable as it permits easier climbing. If ladder tilts to the right, keep to the left and hold branches from that side. Sometimes a prop can be found to slip under the lower leg to advantage.

It is sometimes necessary to close the ladder and poke it up edgewise into the tree, leaning it against a good stout branch, but the top step seldom can be used in this case. In picking during rainy weather the ladder will sometimes become heavy with mud from the feet. This should be scraped off occasionally for the sake of ease in handling, also as an aid in keeping hands clean.

THE PERSONAL FACTOR

One's sense of equilibrium usually warns of danger just before the balance is lost. This is a different thing, however, from the dizziness and timidity some new pickers experience when they get a few steps off the ground.

Each picker should be made to pick thoroughly as far as he goes and not just take those easiest to get, leaving the scattering ones for some one else. It will often be found advisable to divide one's weight between the ladder and a branch or between two branches where either one alone would give way. A tall picker with long arms has a big advantage in picking. If you don't believe it just notice how much any good picker uses his tiptoes either on the ladder or on the ground. Two pickers often work together as a team, one picking from the ladder or tree while the other picks from ground, alternating if desired.

BREAKAGE OF LIMBS

Ordinarily a heavy person does not make an expert picker; however I have seen more branches broken by careless stepping out too far on the lower branch of a crotch or by pulling down a heavily laden branch than I have by actual weight of the pickers. A small crotch will hold up an enormous weight if close up, but if the weight is put a few inches further out, it will split. The breaking down of branches on trees is a more serious matter than pickers often realize. It is more of a loss to the owner and has more effect upon the future usefulness of the tree than if he hacked out the branches with an axe.

THINNING IN ITS RELATION TO PICKING

Thinning, although considered by some to be a part of the picking, is so different an operation it will not be taken up at this time except to say that where all imperfect, small and superfluous specimens have been early removed, the regular picking job is materially lessened. If all the apples on the tree are practically perfect it will well pay to handle them carefully, but if a large per cent are going to be graded out the temptation is to economize by shaking or in some manner "hustling" them off, for it is obvious that it does not pay to hand-pick, box, haul and sort a lot of culls.

IMPORTANCE OF MATURITY

When picking begins, maturity should be taken into consideration, as well as color. This is shown mostly by dropping, or the ease with which they part from the stem but this is not an infallible guide, as some varieties are very tenacious and others have a weak fruit spur which naturally breaks next to the branch instead of near the apple stem, necessitating the picking of twigs from the apples. Great care should be taken so to turn or twist the apple backward as to break off as few fruit spurs as possible.

VALUE OF CARE

There are many ways in which apples may be injured in picking. Finger nails should be cut quite short, as the best picking is done bare handed. Pickers wearing gloves invariably will drop many more. Make a comparative count of the number accidentally dropped and the result will be surprising.

Twig and stem punctures are less numerous but also can be eliminated to a great extent by more care.

Pouring into the box with a rattle, the apples striking the edge or bounding from the bottom, is little better than the old method.

The old fashioned "machine" consisted of a long pole with an "A" shaped wire at the top, to which was attached a canvas spout down which each apple shot to pound against the previous unfortunate specimen.

When the holder was full, the lower end was opened and they were dropped into a barrel which when full was pressed down with an apple press and nailed up.

QUESTION OF REMUNERATION

It must not be taken for granted that rapid picking always is to blame for damage to fruit; some of the fastest pickers are also the most careful and efficient. The question then arises "How shall we pay—by the day or by the box?" It is safe to say that if a good picker could be hired by the day and could also do topping, the owner would be ahead, but poor and new pickers should work by the box.

TRICKS OF THE TRADE

There are many tricks of the trade which a good picker will soon acquire in getting his apples from twig to picking sack or bucket.

"Trussing," means holding branches of two limbs together to prevent swaying or to restrain an incurved branch while being picked.

"Finger creeping" is working the fingers out onto a branch so as to curve it in to pick.

"Swaying" is pulling on a leaf or twig so as to bring branch within reach. I have seen pickers drop an apple they had worked hard for and catch it again before it got out of reach, or shake an apple a foot or so above their reach and catch it unharmed. It sometimes happens that a picker will get his bucket full in the top of a tree and have only half a dozen left to come back up for. They may sometimes be stored in his pockets or tossed out beyond the branches to the ground if it is soft and not lumpy.

RECEPTICLES

There are many advocates of both picking sacks and buckets, but in either case they should be so constructed that they may be lowered into the box, allowing the apples to roll out, rather than drop. The grower, of course, should provide himself beforehand with as many as he thinks he will need.

Sometimes trees will be found so full and low that several boxes can be picked directly into the box with little handling, but care should be taken at all times to keep the boxes clean—especially during wet weather.

If ground is muddy, lay two trips or props along the north side of the trees and on these place the number of boxes the tree is estimated to yield.

All apples picked each day should be hauled in on a low wheeled wagon and tallied up so as to give each picker credit for his work. This can be done either by giving each picker a numbered check which he tucks into each of his boxes, or by letting him mark his number on the edge of each box, keeping also a record himself so as to check up with the owner.

An Eastern Apple-Picking Scene. Note Baskets Used for Field Packing.

The Future of the Carob

[In previous articles ORCHARD and FARM has pointed out the value of the carob and possibilities for its profitable culture in California. This paper, submitted by a native of Greece, where the carob is of prime importance, is particularly interesting, in that it points the way to new uses which indicate a great future for the tree in this State.—Editor]

THE carob tree is a native of Syria and its existence has been known at least since the time of Christ. From Syria it was brought to Greece and later introduced by the Grecks to other Mediterranean countries. Today carob trees are found growing all over the east shores of Africa; in the southern regions of Spain, Italy, Greece, Asiatic Turkey, and perhaps as far east as India; also in America, South America, Mexico and Australia. However, the great carob growing sections of the Old World are the islands of Cyprus, Crete, Chios, Samos, Sicily and Malta.

PLANT HISTORY OF THE CAROB

The carob is a long-living evergreen tree, which is known scientifically as *Ceratonia Siliqua* and commonly called "St. John's bread." The plant is very sensitive to cold and dampness, and thrives best in semi-arid regions, especially on limestone soils. The usual height of the tree is 30 feet, but old specimens have reached the height of 50 feet, with a trunk diameter of 45 inches.

The tree is propagated from seed and grows well with comparatively little care, provided soil conditions are favorable. But since trees are easily grafted or budded, this method is much more preferable than seeding, as the crop produced is of better quality.

The full grown tree bears large, compound leaves in which are attached a number of pairs of thick, leathery leaflets. The flowers are formed in clusters and are colored ocra-yellow. The blooming season of the carob in Greece usually begins the last part of October and may extend as late as the middle of January, according to the season. Later the flower clusters develop into a great number of pods of characteristic shape resembling a goat's horn. It is from this characteristic shape that it derives the scientific name "Keraton," meaning in Greek, "horn."

The pods are chestnut brown and from 4 to 12 inches in length, rather semi-angular with a thick, woody appearance. The inner part of the pod is filled with sugrose, pulpy material in which flat, horny seeds are imbedded. The ripening season of the pods in the southern region of Greece is July and August, although the crop usually is gathered in September.

THE CAROB IN GREECE

The carob tree is reported as growing throughout Greece, from the north to south as far as the Cape of Malea, and on the surrounding islands to the east, west and south.

Trees are seen growing here and there mostly in a wild state. As a matter of fact, natives pay little attention to the systematic cultivation of the plant and the consequent improvement of its varieties. However in recent years, due to the efforts of the Ministry of Agriculture and the demand for the carob for export trade, a great

variety has been produced on the island of Crete.

The most productive carob sections of Old Greece are the southern part of Peloponnesos and the islands of Cyclades and Crete. The latter island seems to be an ideal location for carob culture. On this island are found trees which, in full bearing, produce from 400 to 800 pounds of pods to a tree, and occasionally larger trees may produce as high as 1500 pounds. Not long ago Italian growers took cuttings from this island, considering the Crete carob bean the heaviest and best developed fruit of the Mediterranean varieties. The annual production from this island is estimated at 50,000 to 75,000 tons. Before the war the bulk of this crop was exported to Russia for human consumption.

FOOD VALUE AND USE

The carob pod contains a large amount of sugar, which renders it a valuable food for both humans and animals. Various analyses of pods have shown that they contain between 36 and 45 per cent sugar and about 7 to 8 per cent protein, while 80 per cent of the total weight of the pod is digestible.

The carob pod has been extensively used since early times in Greece, where it constituted a primary food for farm animals. However, in recent years, and especially during the great war, it has been used more generally than ever before. When Greece was forced to enter the war and blockading cut off the supplies of wheat, carob bread was introduced in the market and widely used; thus it may be said the carob saved the lives of millions of people.

It is the general practice in country homes in Greece, where animals are kept either for home consumption or for commerce, to feed the carob pod almost exclusively. This makes it necessary for the peasants in the country to gather their own pods and treat them to prevent fermentation. Usually when the crop is gathered from the fields it is moved to specially constructed yards, where the pods are left exposed to the heat of the sun for several days, but in some sections they are dried in artificial heat by baking in earthen ovens at a certain temperature. After the pods have been thoroughly dried they are stored in cold, dry cellars.

There are two ways in which pods are fed to farm animals; first, a rather crude method, but one more or less widely practiced among the peasants who are keeping only a few animals: The beans are crushed to small pieces by beating the pods with a club, or are chopped in stone mortars.

The second way is more practical but is rather expensive and more laborious than the first. The pods are treated through an ordinary grinder, reducing them to a pulp with which other grains, such as bran, ground oats or by-products high in protein, are mixed. This makes a balanced ration. Still a few progressive dairymen prepare their feeds in yet another manner. After the pods have been properly ground they are soaked in warm water for 24 hours, then are added mixed grains and especially cotton seed cake. This feed is considered among the dairymen to be the best for dairy cows or milch goats.

The soaked carob pod is taking the place of wet beet pulp and molasses, which in this country dairymen are feeding their cows.

FOR "PATENT" FOODS

It is known that leading European dairy countries which have experimented with the carob pod for many years have come to the conclusion that the carob is a splendid ingredient for "patent" or manufactured feed. Today these countries are importing enormous quantities of carob pods annually from the Mediterranean.

The next important role played by the carob in Greek industry is the [illegible]ture of alcohol and other [illegible] by-products. The processes [illegible] from the carob pods [illegible] known among the distilleries, [illegible] the beans are treated [illegible] that the seeds are extracted [illegible] only the pulp [illegible] for the manufa[illegible] while the extracted [illegible] in England.

While [illegible] for feeding [illegible] alcohol and making glue, oils, etc., it is surprising to know that it can be served also as a sweetmeat and for beverages.

"Pastely" is a Turkish sweetmeat prepared from carob syrup, mixed with nuts, raisins and gingellis. Usually the nuts are mixed and placed in frying pans, not more than one-half an inch thick; then this mixture is placed in the oven in a low temperature until it is well hardened. When ready it is cut into square cakes, sprinkled with gingellis and served cool. (No doubt this sweetmeat could be served as a novelty dish in American hotels, restaurants and homes.)

"Sharbat" is a splendid summer beverage prepared from the syrup of carob pods. Pods are soaked in water for several days until a strong fermentation has taken place. Then this fermented syrup is treated with spices which impart a delicious flavor. The syrup is served with either carbonated water or plain iced water.

Carob pods are used also for home medication and especially for throat diseases.

There is no question that the progressive California farmer could grasp the opportunity to utilize this valuable plant to much better advantage than the Old World Greek farmer, who has pracically no scientific training or knowledge. Therefore I am urging the California farmers to give more attention to the carob tree and plant it both for profit and pleasure. Last, but not least, it is a beautiful oranmental and shade tree.—Constantine A. Petmezas.

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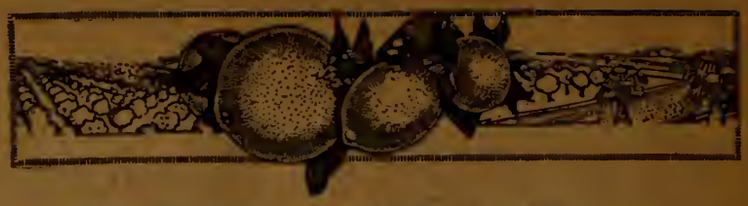

Fall Work With Citrus

By Vincent F. Blanchard

Sub-Soiling

CITRUS trees are planted on a wide range of soils, from very open to heavy, compact types. Each type of soil requires different management.

Soils which are so compact they are impenetrable to water, usually are difficult to handle. Some of these are uniformly compact, while others have a hard layer or plow sole a few inches below the surface. Hundreds of acres of citrus trees are planted on such soils in California and more trouble has been experienced with such groves than those of any other kind.

Trees must have a uniform moisture supply in order to function normally. When a soil is so compact that water will not penetrate readily, there is danger.

One of the most satisfactory means of handling such soils is to practice sub-soiling during the fall months, or before the trees come into active growth in the spring. Sub-soiling is not always a cure, but will at least temporarily open the soils so that water will penetrate more readily.

TIME TO SUBSOIL

If a cover crop is to be planted in the fall, sub-soiling should take place prior to planting. Some growers make a practice of running the sub-soiler down the middle in two directions, while others make a more thorough job by running on the diagonal as well. The number of furrows between the rows will depend upon size of trees. With young trees it is possible to open more furrows than with older trees.

For mature trees, the general practice is to sub-soil from one to three times through the rows. Deep penetration of the sub-soiler is desirable. Some go as deep as 16 to 20 inches; but the deeper the penetration, the more pulling power will be required, and the higher the cost. There should be a penetration of at least 15 inches in order to have much benefit from it.

The grower should be sure that he has sufficient power to pull the sub-soiler, for sometimes when power is inadequate, the cost of operation is high, and depreciation of equipment becomes a serious factor.

The Winter Cover Crop

WHETHER to plant a winter cover crop is a question in the minds of many citrus growers this season. The experiences of some growers as to the influence of the crop upon temperatures during the devastating freeze of January, has discouraged many growers from planting cover crops. It was stated that lower temperatures were experienced where there were cover crops than where the soil was clean-cultivated. Naturally the growers are much concerned over this matter.

OFFICIAL DATA AVAILABLE

At the Citrus Institute held at Pomona, Floyd D. Young of the United States Weather Bureau stated he had collected data which would be of great help in determining whether cover crops influence temperatures. Mr. Young recently has stated the analysis of this data will not be ready until about the first of October. However, work done by Coit and Hodgson in 1916 and 1917 in studying the cause of June drop of the Washington Navel Orange, proved that a summer cover crop has the effect of lowering temperatures. In 1919 the Citrus Experiment Station in further studies on June drop, verified those findings. At the Arizona Experiment Station an investigation found that both summer and winter cover crops lowered the temperatures. It is apparent therefore that enough data are at hand to indicate the influence of cover crops on temperatures.

Even though cover crops do cause a lowering of temperature, however, it would be folly to eliminate them generally. This may be advisable in locations known to be cold where heaters are not available. But for most locations it is quite probable that over a period of years the benefits from the use of cover crops will outweigh any detrimental effects. In those colder places, it might be more advisable to grow summer cover crops, especially where water is available at a reasonable cost and in sufficient amounts.

GREAT BENEFIT DERIVED

Benefits which can be derived from cover crops are so great, they cannot be ignored. Our California soils are mostly rich in potassium and phosphorus compounds, but deficient in nitrogen and organic matter. A soil expert who has spent years studying the soils of California has stated that if the California farmer can be made to realize the importance of continually supplying organic material in adequate amounts to his soil, much will have been accomplished toward making our agriculture permanent.

Organic material has the effect of rendering plant food available for plant life to use. Even though our soils contain these potassium and phosphorus compounds in sufficient amounts, their supply is largely in unavailable or non-soluble forms. When organic matter decomposes, acids are formed which render these plant foods available. The addition of soluble potassium and phosphorus fertilizer will not take the place of organic matter, for soon after those fertilizers are added to the soil, they become fixed in an insoluble form where they are placed.

PHYSICAL EFFECT ON SOIL

Besides the benefit derived from rendering these plant foods available, organic matter makes a soil more flocculent and easily worked. It also increases the moisture-holding capacity. When leguminous cover crops, such as the vetches and clovers are grown, free nitrogen is assimilated from the air by bacteria working on the roots. When the cover crop is turned under this nitrogen is changed to a form which is available as plant food.

A cover crop is the cheapest form of organic material. The greatest outlay is for water supply; enough water should be added to furnish both trees and cover crops. Some growers have estimated the cost of growing a cover crop at approximately $20 per acre. The value to the grove is at least $50 when an average stand is grown.

LEADING COVER CROP

The two leading cover crops for winter use are Melilotus Indica and Purple Vetch. During recent years more Melilotus Indica than vetch has been grown, due to the fact that purple vetch seed has not been available in sufficient quantities to become generally used. During the past two years however, purple vetch seed has been produced in Northern California in fairly large amounts. Purple vetch gives greater tonnage than Melilotus Indica, and has the advantage of growing in colder weather. Melilotus Indica must be planted early in order to obtain enough growth before cold weather begins. Purple vetch also can be used to advantage where it is difficult to obtain a stand of melilotus indica.

About 20 pounds of Melilotus seed per acre and 40 to 50 pounds of purple vetch seed is necessary. Melilotus seed

is very small, while purple vetch seed is large.

Care should be exercised in obtaining a good seed bed before planting. Many failures with cover crops are traced to a poor seed bed. With melilotus, the seed should be broadcasted and then worked in lightly. Small seeds should not be covered deeply. After sowing, furrow out and then sow in the furrows.

Purple vetch seed should be worked in deep, about the same as when sowing beans. Drilling gives better results than harrowing in. Irrigation should follow soon after planting melilotus, and another should be given before the surface dries out. With purple vetch the irrigation should come before preparation of the seed bed and again after the seeds germinate.

Fall Irrigation

CONSISTENT irrigation during the fall and early winter months is of more importance than is realized by many citrus growers. And it is of far greater importance when a cover crop is planted, for it takes about 500 pounds of water to produce a pound of green cover crop. The greatest danger during the fall and early winter months consists in depletion of the soil moisture supply. Growers have a tendency to rely too much upon the first rains.

An inch of rainfall when the upper few inches are dry, is of but little help in meeting the moisture requirements By the time those few inches are soaked up, there is not much left to penetrate to the root zone.

Every grower should know thoroughly the soil conditions in his grove, for moisture requirements of soils are determined largely by soil type. The lighter the soil, the more frequently irrigation must be given and the less water is required to obtain the desired penetration. Frequent use of a soil auger will tell much about moisture conditions and often will prevent a soil from becoming too dry, or will save on irrigation at the wrong time. More troubles are traced to improper irrigation than any other factor. If a consistent effort is made to cut the possible mistakes in irrigation to a minimum, much will be accomplished towards obtaining maximum efficiency.

Fluctuation in moisture content is a most common difficulty, and can be remedied easily by soil examination from time to time. Fluctuations in moisture content will cause off-blooming, shedding of leaves, early dormancy when the supply becomes depleted; irregular growth, cutting down of plant food supply, a check in soil bacterial action and a general unhealthful condition of the trees.

Fall Fertilization

MUCH greater benefit can be derived from manures during the fall months than at any other time of the year. Since it takes a long time for manures to decompose so that plant foods contained in them become available, it is more desirable to have them applied at a time when they can decompose most readily and yet not suffer loss of plant food. Manures applied either by the furrow system, or plowed well under during the fall months, decompose during the moist winter months. Nitrogen is assimilated by the cover crops, and but little is lost through leaching or exposure. When the cover crops are turned under in the early spring, the nitrogen again becomes available shortly afterward. Emphasis should be placed on the importance of having the manure sufficiently deep to prevent loss of nitrogen and organic material by exposure.

J. E. BERGTHOLDT

CREATOR of a comprehensive plan for increasing the production and sale of California fruits, this widely known nurseryman and grower is receiving the congratulations and good wishes of thousands of producers. Editorial discussion of Mr. Bergtholdt's work was included in the September number of ORCHARD and FARM.

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Luther Burbank

(Continued from Page 5)

types of berries in California within the last twenty years.

The red raspberry has been under cultivation in Europe for fully fifteen centuries, being a native of the greater part of that Continent and extending all the way from Norway and Sweden to Spain and Greece. Linnaeus named it *Rubus idaeus* after Mt. Ida in Greece; since then many varieties have been produced—more than twenty having been under cultivation in England a century ago.

Early in the history of America, the colonists introduced this favorite European berry, but it did not find a congenial environment in the new country; the long, cold winters of the Northern States and the dry heat of the Southern summers were too severe; and on account of this lack of hardiness it was little grown except in garden cultivation.

But the new continent possessed many wild raspberries with limitless possibilities; and in time these came into cultivation so gradually that their intrusion was unnoticed. Early in the century just concluded, the only raspberry cultivated to any extent for the New York market was the English Red. This has been shown to be an offspring of one of our wild berries, *Rubus neglectus*, and not, as then apparently supposed, of English origin.

In the early forties Nicholas Longworth discovered and made known the merits of the wild black raspberry, *Rubus occidentalis*. This new berry was a great addition to the list of cultivated berries, and soon became a favorite fruit wherever it could be successfully grown. Mr. Longworth introduced his new discovery into England, but this American fruit did not thrive in the English climate and its culture never became a success in that country.

The cultivated raspberries of the present owe their origin to five different species. *Rubus idaeus*, the European red raspberry, is represented in America by a closely related species, *Rubus strigosus*. Varieties of this native red raspberry were first introduced into cultivation in 1860; these were Allen's Antwerp and Allen's Red

Prolific. From these two closely related species all the true red raspberries now in cultivation have been developed.

The purple-cane type apparently sprung from the Eastern *Rubus neglectus*; such varieties as Reliance, Shaffer, Philadelphia, and Gladstone are, at least in part, probably of this origin, as was the historical English Red. This species is a native of the northeastern part of the United States, being especially common in New York.

The most widely cultivated type of raspberry in Eastern America is the blackcap. This very distinct class, as was stated above, is a product of the wild blackcap, or black raspberry, *Rubus occidentalis*, native throughout the greater part of Eastern North America. In the Rocky Mountains and on the Pacific Coast this species is represented by a close relative, *Rubus leucodermis*. This Western species is the latest entree in the field of cultivation.

Fast Growing Fig Industry

THE fig, oldest of known fruits, synonym for substance and dependability, it is predicted, will be the basis of California's newest horticultural industry. Packers and growers of the San Joaquin Valley, the natural home of the fig in America all agree that the future holds for the fig a wider and more varied market than is now enjoyed by the raisin. Plans are now being made for exploitation of the fig along the same lines that carried the California raisin to world wide fame.

This exploitation will of necessity be on a moderate scale for the time being for the very good reason that the demand for California figs already exceeds the supply. Furthermore the natural growth of this demand will increase faster than the acreage planted to figs can be extended and brought into bearing. Reports from Merced, Planada and other points in the fig belt show that this year's crop was all sold before the second harvest had been completed. Reports also show this year's Kadota fig crop is the largest in the history of the industry.

The fact that the fig possesses qualities which give it first place in the list of natural foods, is a guarantee of a permanent market. And the fact that the territory in which figs can be raised to commercial advantage in the United States is limited to California, is a guarantee that the fig grower, by virtue of this natural monopoly, can depend always on a good price for his product.

As the first step toward meeting the growing demand for figs, the packing interests of the San Joaquin Valley are making every effort to induce growers to increase their acreage. To make the increased acreage productive as early as possible, many growers are planting trees of the Kadota variety, because it reaches bearing earlier than any other kind and bears heavier crops.

The Kadota requires no caprification. It stands long distance shipping, fresh, without deterioration; is a satisfactory fruit for drying and in a class all by itself for preserving. Practically seedless, it is the only fig that can be preserved whole with commercial satisfaction and certainty. On this account it is in great favor with the packers who stand ready now to contract with the owner of a Kadota fig orchard for his entire crop, in the orchard, for an indefinite period.

The Kadota orchards planted out by Planada by the Planada Fruit Farms are in splendid condition. The two-year-old trees are stout and flourishing, and although even Kadotas do not bear a commercial crop until after the third year, these baby orchards made an interesting showing of yellow fruit this season.

"After the third year," said Marvin Warner, manager of the Planada Fruit Farms, "there's no condition of the elements of this part of the San Joaquin Valley which will hurt a Kadota fig tree. The owner of an orchard of three-year-old Kadota figs has a certain an income producing asset. If the money were in bonds—and the Kadota figs will pay him a much larger income than twice the amount invested in bonds."

Is Calcium a Fertilizer?

HAS calcium a value to the soil that even the best informed agricultural chemists have failed to recognize? This is the contention of Fred L. Sexton, of Anaheim, Cal., who is backing his belief in this element by the construction of a quarry and crusher of large capacity in Southern Orange County.

Leases have been secured upon a tract of land comprising large deposits of decomposed marine shell, of which veritable mountains are present, and which is said to analyze more than 95 per cent pure calcium carbonate, and to contain also considerable quantities of phosphorus compounds.

SOIL TEXTURE CHANGED

Applications of this material to certain Southern California citrus groves are said to have produced truly marvelous results. In one case, following the addition of some 10 tons per acre, a hard, unyielding, almost unworkable adobe soil was changed in physical character to an easily-worked, loose loam, which required 25 per cent less irrigation.

Another case is cited of an orange grove which in spite of the use over a period of years, of great quantities of dairy manure, had never produced a profitable crop. One application of the decomposed shell put the trees in thrifty condition and they are now carrying one of the heaviest loads of fruit to be seen in that district.

While various explanations for these results have been given, Mr. Sexton asserts it is because the lime not only sweetens the soil, but also increases its humus content. Furthermore he contends that it increases bacterial activity and acts as an agent in releasing or making more available, other plant food elements in the soil.

California soil chemists have taught, however, that our soils are more lacking in nitrates and humus than in either lime or mineral constituents. For this reason the use of lime in large quantities has been more or less discouraged in the past by the University and other official agencies. The contention has been that conditions obtaining in the Middle West and East, where lime is applied so generally, did not apply to most sections of this State.

ENTHUSIASTIC USERS

That the marine shell material, however, when applied in a pure state and in sufficient quantities, tends to improve the physical quality of certain soils has been proved beyond a doubt. And a number of enthusiastic users are ready to acclaim its value as an actual fertilizer.

Mr. Sexton stresses the availability of the calcium contained in marine shell deposits. "Chemical laboratories," he say, "can scarcely distinguish between available and non-available calcium carbonate in soils, but in the laboratory of nature the plant will soon demonstrate by its unhealthy appearance, its small sized leaf, deficient crop and all degrees of stunted growth, that the soil is not sufficiently limed. Experiments have been performed in Orange County on citrus orchards which had been amply fertilized with the different varieties of barnyard and other fertilizers yet were gradually dying, their crops reduced to a minimum and in fact preparations were being made to dig out the trees, when by one application of marine shell fertilizer the whole picture was changed in a year. The trees began to grow, large, dark green, healthy leaves replaced the small delicate ones, and a good crop was produced. This could not occur by using marble or limestone but did occur by using a form of calcium which is quickly absorbed by the soil—marine shell fertilizer."

The development of the marine shell deposits promises to become a big industry in the Southern County, where hundreds of tons of the material are being crushed.

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Photos by International

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Secretary of Agriculture Wallace is here shown broadcasting Arbor Day greetings from his Washington office. He asked that our citizens co-operate in keeping the forests green and protecting them from fire; in planting trees in waste areas on roadsides and farms, and in preventing the deforestation that is threatened in many parts of America.

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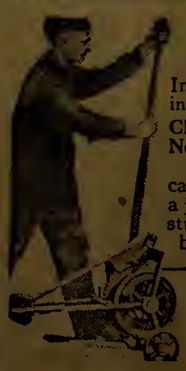

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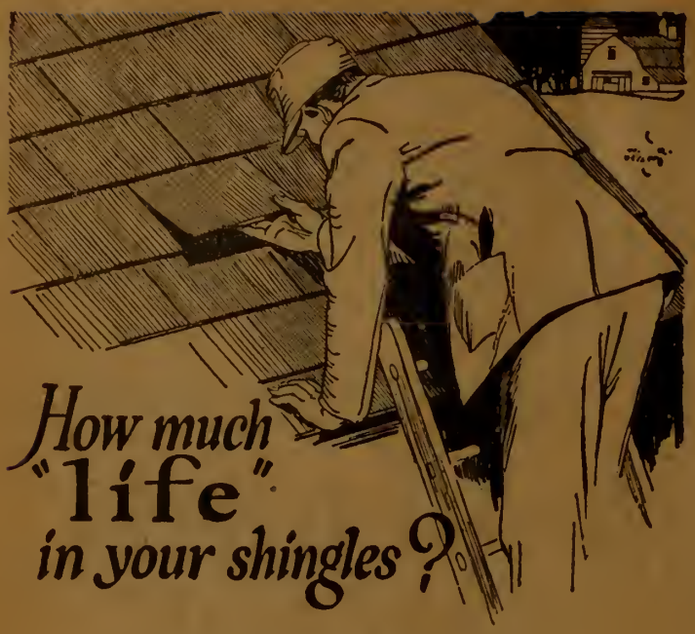

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More About Pigeons

By T. E. Berry

PROPRIETOR OF THE LARGEST MODERN SQUAB RANCH IN AMERICA
WRITTEN ESPECIALLY FOR ORCHARD AND FARM.

Part III—Further Discussion of Breeds

THE "Barb" is a North African bird, and is the direct opposite of the Carrier except in the wattle, which is very much the same as that of the Carrier. Barbs are found in black, dun, red and yellow and this type is another once favored, that has lost its popularity so that now a good bird of the type and breed is seldom seen.

T. E. Berry

THE OWLS

The Owl is another North African bird, short and cobby, with a very short and decurved back, and on the breast a row of inverted feathers known as a frill. The breed has never been popular. Its colors are blue, silver, and dun. The Chinese or Whiskered Owl is similar to the African bird, but has the frill more developed and extending around the sides of the neck. It is a very attractive bird and is quite popular in this country. Owls, like all short-beaked birds require feeders for the young.

THE TURBIT

A short, full-breasted bird, small in size with frilled breast, the skull rising high in front, falling off gradually to the rear, set off by a well peaked crest. This crest rises from the mane, which extends up the back of the neck. In color the Turbit is pure white with only the wings colored. The colors are black, dun, blue, silver, red, yellow and checkered. Feeders are used for their young also.

ORIENTAL FRILLS

These birds have not only frills and crests, but also complicated colors and patterns and sometimes feathered legs as well. Asia Minor is the home of this breed, many of the best of them being imported from Smyrna. They are very popular among the fanciers. They are small, with short, stout beaks, round heads, and "cobby" bodies. The Satinette is white, with pale pink wings edged with black; the tail is dark blue, each feather having a round white spot under the end. It has feathered legs and a peaked crest. Plain heads sometimes are seen. The Brunette is similar, with a grayish background and a reddish lacing. The Bluette and Silverette are clear blue or silver, respectively, with two white bars on the wings.

The Blondinettes are colored throughout, not merely in wings and tail. They have full crest and boots, and are of many colors, such as black, dun, red and yellow, darker on the neck and paler on the wings, where each feather is laced with the darker shade. The Turbiteen is nearly white, having three circular marks on the head of equal size, one on the forehead, and one on each cheek. It has also frill and boots, but no crest. The Oriental Turbit is very much like the Owl, but usually has the tail colored as well.

THE JACOBIN PIGEON

This bird has extreme development of the crest, is of medium size, with feathers very long and heavy, making it appear larger than it is. The body is slim and straight, with flights and tail well drawn out. The chief point is the hood. The feathers rise from the shoulders in a graceful curve, until they reach the head, around which they fit closely, covering the eye and beak. They extend forward as well as backward and upward, meeting on the crest. The portion which fits around the head is known as the hood. The line to the back is called the "mane," while the part that extends from the hood to the chest is called the "chain." The feathers radiate from a point on each side of the neck, known as the rose. The colors are red, yellow, black and white. There are also a few blues and many splashes.

THE POUTERS

The Pouters form a very distinct group, without close relations. They inflate the crop with air, a practice more or less common with all pigeons, but carried to the extreme with the Pouter. It is a large bird with slender, upright body and long legs, covered with feathers to the feet, where they spread out over the toes. Pouters are found in most colors.

The Pouter once was a very popular bird, but of late years has waned. The Pigmy Pouter is a perfect miniature and is a very friendly little fellow. The Norwich Cropper is a size between the two preceding and is clean-legged, if anything, excelling the Pouter in pouting.

TUMBLERS

The action of the tumbler is well known. Everyone is familiar with its simplest form. It is a single backward somersault made in flight, and from which the bird recovers gracefully. This may be increased to two or three turns or a swift succession of four or more in the Roller.

What makes the tumbler tumble has been a question ever since the bird went over first, but it has never been solved. At any rate, the fact remains, the birds go over and they do it more freely at times than others; that is, when flying with the mate, or purused by a hawk. Some individuals among the rollers appear to lose entire control and having started to roll, continue until they strike some object which stops their fall. Such birds are known as Mad Rollers, and never are able to fly safely, once they lose control.

The young birds, almost as soon as they are on the wing, start to drop and soon get the knack of turning completely over. This bird appears in all colors.

The simplest form in which the bird is seen is the Common Tumbler, which is abundant. It is at its best flying about the garden, making single or double turns; it will not fly for more than a minute or two at a time, and is properly known as the "boys' pigeon."

From this bird, apparently several more advanced forms have developed, including the Birmingham Roller, and the West-of-England Tumbler which have been used particularly for exhibition performing. These birds fly in "kits" (ten or more) and somersault in unison, which is indeed a very pretty sight. To teach a kit to do this requires great patience and careful selection. The Roller is naturally a high flyer, and therefore, is not the most desirable. The breeding, training and flying of Tumblers and Rollers is a fascinating pursuit, presenting many obstacles which are not easily surmounted. Rollers, like all flying breeds, should be taught to drop together on a given spot.

WEST OF ENGLAND TUMBLER

This bird has been developed for flying, as the Roller has been for performing. The two breeds are closely allied, and cannot be told apart on sight. The West is a true "high flyer," kits sometimes staying in the air as long as 12 hours at a time. The West of England Tumbler is a bird that should be used by those who desire a high and long-time flyer. This bird appears in the same colors and markings as the Roller.

PARLOR TUMBLER

This bird has its acrobatic tendencies so well developed that it cannot fly. A good bird cannot rise from the floor and at the slightest attempt to do so, tumbles. Parlors are divided into three groups; singles, doubles and rollers, which roll backwards on the floor until some obstacle stops them. It is necessary in breeding these birds to have the nest on the floor. The

colors of the Parlor Tumblers are black, dun, yellow and splashed.

EXHIBITION TUMBLER

Once despised as boys' pigeons, these birds have risen to a state where they are now among the most popular. Exhibition Tumblers are divided into two groups, Short Faced and Long Faced. The Short Faced Tumbler is very small; in fact, one of the smallest of pigeons. Its legs are short and body chunky; head large and rounded and broad between the eyes; the beak is extremely short, fine and pointed.

Short Faces are bred in many colors, the most popular of which is almond. The Long Faced Tumbler is short in body with prominent chest. The head is rounded, with well developed top skull; the beak is straight-set and stout. They are bred in clean legs and muffs; colors, red, blue, yellow, black, silver and almond. They are most prolific breeders and excellent feeders. The Tumbler family is so great and there are so many variations I will not attempt to go into detail concerning them in this article.

THE MAGPIE

This is a modified Tumbler, for many of them tumble. Many of them were crested, but the present type has a plain head. The Magpie is marked something like a saddle-backed Tumbler, except that the white rump and head marking are lacking. Richness of colors is a point for which Magpies are famous. Blacks excel, with reds and yellows a close second. The old-fashioned birds were Tumbler-like in form, but are now slimmer of body, legs and neck.

Interior view of pigeon house. Nest boxes are shown at left.

The Helmet is a German toy pigeon and is also of the Tumbler family. It is white in general, with the tail and the head to line, starting from the juncture for the mandibles, colored, the upper being dark and the lower white. All colors are found, and there are both crested and plain heads.

GERMAN TOY PIGEONS

These are of the Rock Dove type, with narrow heads and thin beaks, heavily muffed. There are a great many of this type bird, a few of which I will mention here without going into detail. The Swallow, Shield, Ice Pigeon, and Hyacinth are all heavily muffed and of many color variations with crests, frills and lacings.

THE TIPPLER

The Tippler is a high flyer par excellence and was bred in England from ancestors now unknown, but undoubtedly is of the Tippler family. The typical Tippler is the old-fashioned Print, a pearly-white bird with dark flights and tail, the head and body lightly sprinkled with bronze or brown feathers. Tipplers are much like the Clean Leg Tumbler and are noted for their height and length of flight. A good kit often will ascend in spirals until entirely out of sight and will remain for hours at this height. The record length of flight is 18 hours and 32 minutes, made in England in 1915. They are flown in kits of three, five or seven. There are three marked varieties: the Dark Mottle or Print, the Light Mottle, and the Light or Chuck. The eyes are pearl, and the beak dark.

AMERICAN HIGH FLYER OR FLIGHT

[illegible]s is the only pigeon that has orig[illegible] in America. It is a fairly large-[illegible] bird, built [illegible] slim graceful lines, [illegible]d [illegible]rrow and the beak always [illegible] long and tapering, the eye large [illegible]r and pearl in color All colors [illegible] th[illegible]y being solid, with [illegible] a side There [illegible] birds known as [illegible]th plain-headed [illegible] p[illegible] For many [illegible] have been used by men and boys for catching stray pigeons, flocks being trained to fly and drop at a signal.

CUMULET

This—one of the oldest of high-flying pigeons is rather larger than a tumbler with slender body and long; narrow head and beak. The color is white and sometimes ticked with pale red. It is noted for the clearness of eye and its unusual size.

THE NUN

The Nun is of Continental origin. Its tumbler-like form and white eye indicate it came from this line, but nothing definite on this point seems to be known. It is prettily marked, with full shell crest, and appears in all colors.

FANCY PIGEONS

In using the term "fancy," we may give the impression of linking the title with the toy varieties, such as tumblers, fan tails and turbits.

This would be a great injustice to the fancy breeders, who have spent years of time and a great deal of money developing the utility varieties up to a standard of perfection which places them today in the show room as recognized fancy birds.

The method used in developing fancy birds is somewhat different from that used by the utility or more commonly known squab plants. To attain any great degree of success with fancy breeds requires much time and patience in breeding up a strain of any particular kind to a point of perfection where like will produce its like.

Let me add here, however, that the time and patience consumed constitute the great pleasure of the "game," a not tiresome routine.

We must study first our blood line, and next the individual qualities of the birds to be mated, endeavoring to pick good qualities in the male to offset the shortcomings of the female.

In each breed we endeavor to hit the high mark outlined in the standard for that particular breed, beginning with the beak, eye-core, type and color, without which all other good points are lost.

Let me state here to the novice if you anticipate breeding fancy birds, don't make the fatal mistake of starting with "junk" as you will end by spending a lot of money and time with no results.

First decide what variety of birds appeal to you; next, get all the information on that particular breed you can; then buy some well-bred birds. Then you will be able to raise something worth while.

You have an advantage in selecting a utility bird for your fancy breeding, as they have commercial value for meat, and your poor specimen can be disposed of, whereas the toys are very small and have no meat value.

The most popular bird among the utility types in the show room today is the Carneaux, and surely it holds the place of envy from the dollar and cents standpoint.

UTILITY BREEDS

Under this head may be grouped a number of pigeons, but generally they are alike in their large size. The Runt, contrary to its name, is the largest of pigeon breeds, often weighing 2½ pounds. Runts have been tried by the squab raisers with little success due to their weakness in production and also to the amount of feed consumed.

The Hen pigeon is somewhat smaller than the Runt, but of about the same general make-up with the same objections as to squab raising.

MIXED BREEDS

There have sprung up in late years many other so-called breeds of pigeons which are as a whole, crosses of various kinds and which are too numerous to mention in this article.

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A PAGE OF STATE FAIR "GRAND CHAMPIONS"

ALL PHOTOGRAPHS ON THIS PAGE BY BLACKMORE, LOS ANGELES

STUDY HER FOR TYPE—This is "Ava Model Hengerveld 2nd," Grand Champion Holstein cow of the "big show," owned by Fred Hartsook, Lankershim, Cal.

RIGHT — "Lincoln Domino," shown by Wm. Briggs and Son, Dixon, Cal. This Grand Champion Hereford bull was pronounced one of the best ever seen in the West.

THIS WHITE BEAUTY was Grand Champion Shorthorn female. She is "Caledonia Mischief 2nd," owned by Caledonia Farms, West Sacramento, Calif.

DUROC JERSEY SOW, "708 Sensational," owned by Chas. J. LeMoyne, Lankershim. Represents ideal type of newer development of the Duroc Breed.

JUST "ROBIN," but Grand Champion Hampshire sow, and the pride of the famous Underhill, Santa Barbara, ranch. The Hampshire exhibits indicated the increasing popularity and importance of this breed in California.

GRAND CHAMPION Milking Shorthorn bull, "Count Tickford," shown by Tom Harrison, Santa Rosa, Cal.

YEARLING RAMBOUILLET RAM, which took first honors for Bullard Brothers, the well-known sheep breeders of Woodland, Cal.

JERSEY HEIFER, Grand Champion of the Boys' and Girls' Calf Club exhibit, "Foxy's Sunshine," shown by Betty and Margaret Conant, Modesto.

Seasonable Poultry Notes

By Henry C. Turck

[Editor's Note—Mr. Turck has come recently to California, after a lifetime of experience in the East and South as a poultry fancier and commercial producer. While some of his suggestions may be at variance with local practice, California breeders will find his ideas very interesting —Editor.]

KEEP the youngsters growing every minute in the day!

Don't be afraid of overfeeding your growing birds, because it "can't be did!" There is a great outcry about feeding too much and while there is some truth that mature fowls can be fed too heavily, this does not apply to growing youngsters, as every ounce of feed is utilized in producing either frame, muscles, flesh or feathers.

One serious mistake in feeding birds of all ages is to throw the feed out on the floor or ground in such a way that chicks will walk over it, as they are sure to contaminate their feed with filth or droppings from the feet; such soiled feed is one of the main causes of all bowel troubles. Strictly sanitary methods are best for preventing diseases of this nature.

A chicken's natural way of feeding is to pick up its food from the ground, yet most of the standard feed hoppers are hung on the walls of the hen house. Now, if you'll make a few box hoppers or troughs about 3 feet long, 4 inches deep and 6 inches wide, with a 3-inch strip across the top so that birds cannot get into the hoppers or scratch out the mash, you will have a hopper that suits the hen "to a T."

Scratch feed should be fed in a deep litter of leaves, cut straw or alfalfa but should not be fed in the house where it is liable to be polluted with their droppings. Better feed this in the runs or yards, or if you have sufficient room, have a scratching pen or house.

SHADE A NECESSITY

Shade is almost as much of a necessity as feed and water, and should be provided by any convenient method. If trees or shrubbery are not available, plant a lot of sunflowers or castor beans in the runs.

I find one of the best-relished green feeds is New Zealand spinach, which can be cut off like alfalfa and still keeps on growing a long time if well-watered. Another good green feed, not generally grown by California poultrymen, is Dwarf Essex rape. In feeding green stuff of any kind, it is best to make a rack or crate, allowing access through the cracks but not permitting it to be trampled, walked upon or scratched out.

There is a net bag made of seine material that keeps the feed clean; it can be suspended about a foot above the floor. I have not run across these green feed holders out here on the Coast, but they are very much in use in the East or Middle West. I suggest as a substitute, a cheap mesh shopping bag found in the 5 and 10-cent stores.

These bags are ideal also for feeding butcher's "plucks" and boiled meat, as it is kept clean; hung up above the floor the bag provides exercise by the birds "pecking" at it. Just hang up a good chunk of boiled meat and watch the birds go for it—a regular scramble. And as the birds can get at it from all sides, the swaying of the bag won't injure them as if the bag or holder were made of poultry wire.

Right now when the birds are in their moult, is the correct time to feed heavily of both succulent green food and meat! Animal matter, fed liberally, is needed for growing feathers. I find it much more satisfactory and economical to buy cheap beef at 5 or 6 cents per pound than to feed beef scraps which by many poultrymen are not considered fit to be used as food.

A good maxim to follow is to not feed anything you would be afraid to use for human consumption.

Any meat or vegetable matter that is "off" or partially decayed should never be fed.

Where fish can be had cheap enough, it is to be preferred to beef scraps or tankage, but it should be well cooked before feeding; also it must not be fed too freely, as a continued fish diet will taint or flavor the eggs.

Sour milk (clabber) next to buttermilk, is perhaps the best of animal protein feed elements; at least once daily a wet mash (crumbly), mixed with the milk will be a regular feast or "pie" to your flock.

In feeding milk, beware of changes from sweet to sour milk; either one is valuable, and will give good results, but continue the kind with which you start, as sudden change from sour to sweet will cause bowel trouble. Sour milk is preferable to skim sweet milk, and buttermilk is the one best bet in the milk line. While you can get the pure, dried buttermilk from any leading poultry supply or feed dealer, semi-solid or fresh buttermilk is preferred by most producers.

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Short Course in General Agriculture, October 2-November 10, 1922.

Poultry Husbandry, October 2-November 10, 1922.

Deciduous Fruits, December 4-9, 1922.

Dairy Manufacturers' Short Courses:

- Buttermakers and Creamery Managers, February 5-15, 1923.
- Cheesemakers, February 5-15, 1923.
- Milk Plant Operators, February 5-15, 1923.
- Ice Cream Making, February 5-15, 1923.

AT BERKELEY

Third Annual Fruit Exhibit and Deciduous Fruit Conference, November 16-18, 1922.

Conference of Pear Growers, Prune Growers and Apricot Growers, November 13-15, 1922.

Fruit Products Conference, November 16, 1922.

Canners' Short Course, January 2-6, 1923.

Short Course in Land Settlement, February 4-8, 1923.

For Description of Courses, apply to the College of Agriculture, Berkeley, Calif., or Davis, Calif.

Farm production depends upon Soil conditions

All plant life absorbs nourishment from the soil. This nourishment must be replaced if growth is to continue. The constant cropping causes the gradual deterioration of the soil, and the result is weak, scrawny trees and small, unproductive crops.

The most important essential to the life of every plant is Available Calcium Carbonate, and the soil must have it if the crops are to be abundant and profitable. Thousands of orchards and farms are starving today from the lack of Available Calcium Carbonate.

Available Calcium Carbonate gives energy and life to fruit trees and other plants.

Available Calcium Carbonate, full of humus, sets in motion the chemical processes which liberate Phosphoric acid, Nitrogen and Potash, and encourages the development of bacteria. Fruit trees and other plants, therefore, readily obtain this necessary essential to life. With Available Calcium Carbonate, citrus groves produce large, delicious fruit abundantly, and all other crops become large, healthy and profitable.

The most Available Calcium Carbonate procurable is found in marine shells and bones—a product of this Company.

Let us show you—with positive proof—how this product has revolutionized many poor-paying orchards and farms and turned them into profitable ones.

Send for a copy of our interesting folder, "Available Calcium Carbonate as a Fertilizer." It will be sent to you—FREE.

Marine Shell Fertilizer Co.

Chamber of Commerce Building, Anaheim, California.

AVAILABLE CALCIUM-CARBONATE

A Chocolate Sauce that covers everything

Here is a little kitchen idea that many housewives are discovering for themselves: Instead of stopping in the middle of meal-making to prepare some chocolate sauce, why not have a jar or two [home-made] within arm's reach on the pantry shelf? The recipe at the right will take only ten minutes to make. And—you'll have a supply of chocolate sauce that will save you *hours!*

You know how a generous "spilling" of chocolate sauce will glorify a commonplace cup custard. And even a simple cornstarch pudding [or some cooked rice] topped off with this delicious sauce makes a fine, healthful dessert.

How to make it: Mix 1 cup sugar with 1 cup Ghirardelli's Ground Chocolate. Add ½ cup boiling water, ⅛ teaspoon salt, and cook 10 minutes or until thick. When cold add 1 teaspoon vanilla. Store in tightly covered jar. This makes 1 pint of chocolate sauce. Send for our recipe booklet.

Since 1852 D. GHIRARDELLI CO. San Francisco

GHIRARDELLI'S Ground CHOCOLATE

Ornamentals and FRUIT TREES

Vines and Field Grown Roses

Price List Mailed on Request

(Estab-1865)

California Nursery Co.

NILES, CALIFORNIA

Prize Winning Pictures

Here Are Photographs Submitted in Contest for Our Boys and Girls

THE photographs are numbered in the order placed by the judges who awarded the prizes.

No. 1, showing the pet fawn, was submitted by Lillian Murphy, Santa Ynez, Cal. How would you like to have a deer for a playmate?

Photo No. 2, at the top of the page, is of Irene Turner of Gilroy, Cal., and her pony. Don't you envy Irene—or have you a pony of your own? Irene seems to be right at home in the saddle.

No. 3, the last in the group, has lost some of its quality by reduction in size, but the judges gave it third prize. It was sent by Louise Vircovich, Hanford, Cal.

The fourth prize picture, No. 4, at the top, was entered by Elsie M. Lolax, Freshwater, Cal. The girls have named their home-made canoe "Ace." They seem to be seasoned mariners!

Nos. 5, 6, 7 and 8 each received a smaller award. No. 5 was submitted by Richard and Frances Wilsma, San Gabriel, Cal.; No. 6 by

Charles C. Eastman, Seligman, Ariz. Charles says he almost had to "hang by his ears" in order to take this picture of the deep canyon. Wm. T. Smith of Los Angeles entered No. 7, which he says shows two energetic gardeners. But they don't look very energetic, do they? No. 8, of the little boy and his pig, was taken by Lois Snowgoose, Worden, Ore. Celia Allen, Santa Margarita, Cal., also received a prize, but her picture was omitted from the group.

My Pet Fawn

Santa Ynez, Calif.
Aug. 13, 1922.

ORCHARD and FARM,
Los Angeles, Calif.

Dear friends:

I was so delighted when I opened your letter and found enclosed a check for $2.00 as first prize in the Junior Photo Contest!

I wish to thank ORCHARD and FARM and all who aided in solving the winner. Some of our ORCHARD and FARM readers might like to know how we raised our pet fawn, so will say it was on diluted cow's milk, a treat of salt and sugar occasionally, and ripe red apples, if you please. You will notice by the snapshot he has a whole apple in his mouth.

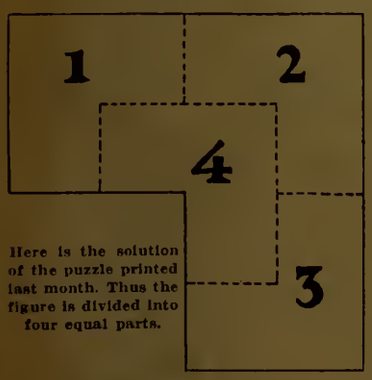
He follows us out walking on the pine ridged hills. Sometimes he lies in the shade or feeds around brush, and when he loses sight of us, he "baa-a-s" loud and clear and if no one answers, he scents the trail, and down he comes like a big jack-rabbit out of the brush. We have lots of fun playing with him.

My little sister likes to see him run and jump; she chases him with a stick (she pretends she will hit him) and he runs around the house, then up the hill back of the house, then comes down in high, short jumps. I bet the circus people would like him! He is a dear, cunning little animal and we just love him. He sleeps on our front porch by the door. No dog or cat is allowed there either—not if Mickie knows it.

He surely is jealous but we love him all the more for it, because he is so clean and affectionate.

Your loving little reader,
LILLIAN MURPHY.

HOW THE FARMER DIVIDED HIS FIELD



Here is the solution of the puzzle printed last month. Thus the figure is divided into four equal parts.

Framing Pictures

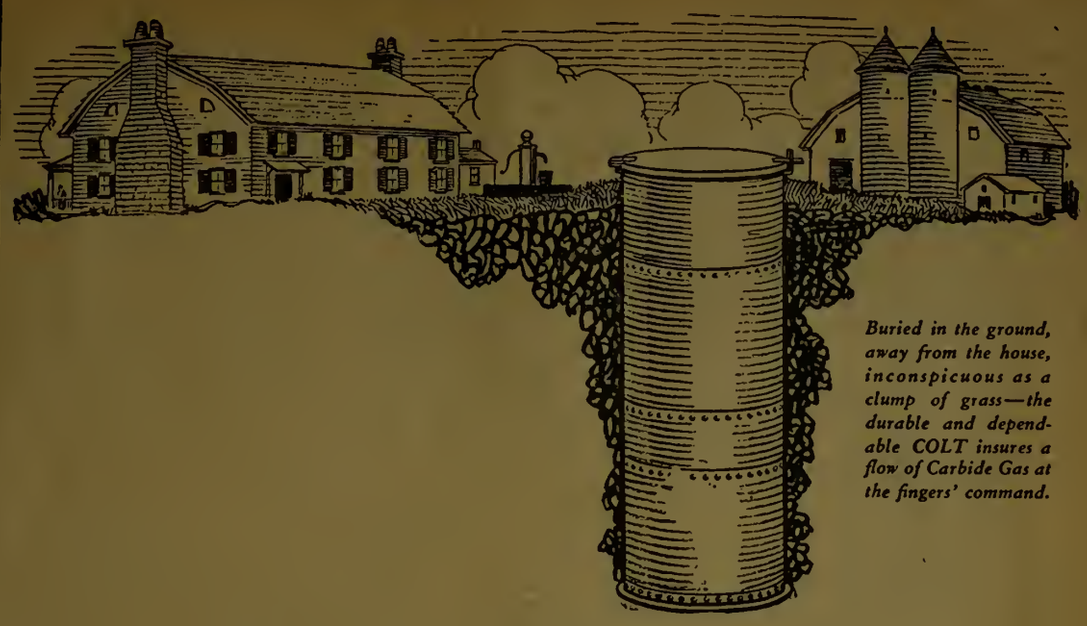
GOOD prints of new or old pictures very often are to be found in the current magazines, especially the women's magazines. Some are so good that we hate to "pass them up," yet we hardly feel like having a magazine print put into an expensive frame.

An excellent way of framing such pictures attractively but inexpensively is the old "passe-partout" method. The only materials needed are a piece of glass the size of the picture, a piece of cardboard the same size to be used as a firm support (the picture may be mounted upon it), the "passe-partout" tape, and some kind of hook for hanging.

The glass may be secured at the hardware store for a small sum, about 15 or 20 cents, or possibly you may have a piece from an old frame at home. Old photograph plates may be used, if washed clean in hot water and soda. The tape may be found at almost any department store. It comes in different colors, but black is usually the most effective, especially for bright-colored pictures.

You can get the cardboard from a cardboard box. The process of framing consists simply of moistening the tape and fitting the glass, picture and cardboard together with it, folding the tape that will be as wide on the glass as you want the frame to be. A hook may be improvised by fastening a small piece of wire or cord to the back of the cardboard with a strip of the "passe-partout" tape.

Nowadays the more modest the frame the better taste is shows, because, after all, the picture is the important thing. A picture framed in this way makes a good gift as well as a pretty decoration for your room.—Gladys J. Crail.



Buried in the ground, away from the house, inconspicuous as a clump of grass—the durable and dependable COLT insures a flow of Carbide Gas at the fingers' command.

Plant a COLT "Gas Well" on your farm NOW!

The months of short days and long nights are on their way.

Six months of evenings to be passed indoors await you!

Will they be lighted by the dim, eye-straining flame of a lamp—or the soft, friendly brilliance of *real* light—CARBIDE GAS LIGHT!

Act *NOW* for *real* light! Get a COLT Lighting and Cooking Plant—generate this wonderful Carbide Gas.

Hundreds of farmers are preparing this month for bright, cheery evenings by installing COLTS. This is the great planting season for COLTS. More are being installed this Autumn than in any other season. Don't risk disappointment—order your COLT *now*, before Winter closes in.

The Health Light for Reading

Carbide Gas Light is *pure white* in color—not *yellow*. Looks exactly like sunlight—restful and soothing to the eyes. Read or sew under it for hours—no eye weariness. The most beautiful as well as the most healthful of artificial lights.

Comes to you at the twist of fingers. Turn a little igniter. . . . . on goes the light! You use no matches.

Carbide Gas for cooking, too—*an added feature of the COLT.* Your wife will certainly appreciate this.

How is the gas made? The COLT does this automatically—mixes Carbide with water.

Study Lighting Plant Costs. Result: You'll Install a Colt

Easy to install—within reach of all. No continual replacement of parts, no adjusting or tinkering necessary, no service required—simplicity itself. The most economical system all the way thru. Comes from Factory to Farm. Sold direct by COLT solicitors—no distributors or dealers to take a profit.

Send Postcard for Full Story

You want *good* light—you want it installed now. Write for full particulars—*then act for BETTER LIGHT!*

J. B. COLT COMPANY

30 East 42nd St., New York — 8th and Brannan, San Francisco

COLT TRADE MARK

Oldest and largest manufacturers of Carbide Lighting-and-Cooking Plants in the World

31ST SUCCESSFUL YEAR

Farmers Should Read HOW

Railroads Were Built, Operated and Wrecked From 1850 to 1922.

25 CENTS PER COPY.

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Room 128, 223 W. Second St.
Los Angeles, California

RUST RESISTING FLUME GATES

Copper Alloyed, Galvanized Iron
1-in., 1½-in., 2-in. Standard Sizes.
Plain for open flume, and brass seat pressure gates for capped over stands.
Write for Samples and Prices.

K. W. MFG. CO., Ontario, Calif.

512 East A Street,
Superior Gates Since 1910.

ISABEL SINCLAIR'S PAGE

For the Woman in the Home

Dear Friends—

I have an acquaintance who is never free from a self-imposed burden. It keeps her thin; it has brought premature wrinkles to her brow; it has taken the youthful light out of her eyes; it is FEAR.

All her life she has allowed her imagination to run riot, and it has exacted a terrible price.

Her husband drives a car almost constantly, and she is never quite free from the consciousness of what MIGHT happen were he to have an accident.

From the time her children leave for school until they return at night, she is in an agony of torment as to possible fatal mishaps that may befall them.

When even slight illness affects some member of her family, she lives through the terrible torture of disease and death; afraid the cold will develop into pneumonia; afraid the sore throat will become diptheria; afraid the surgeon's knife will slip.

None of the awful things she has imagined have ever happened. Her husband is a conservative, self-assured driver; her children are cautious and sensible, and their route to school does not cross any boulevards or car tracks; her immediate family has never been visited by any kind of really dangerous illness.

Yet what a torment is stirred within her mind, and how really she suffers! It is a pitiful case. She will never be well and strong, and consequently will never be happy, until she changes her outlook upon life. Neither will she be able to give her best to her family.

Let us hope she has not cultivated her morbid imagination to the point where she cannot gain control over it. And let us all take a lesson from her life!

Sincerely,

Isabel Sinclair

Those Closets

NOT long ago I began to check up "lost effort and waste motion" with the idea of doing away with many petty annoyances of our daily home life.

One of the first points of attack was the clothes-closet. First I took everything out and gave the closet a thorough cleaning; then I contemplated all the hooks around the sides and decided the waste space at the center should be used. Therefore I secured three strong sticks, or strips of wood, which I nailed across from side to side. It is possible to hang twice as many clothes upon such rods as upon hooks, in less space and with less "mussing" of the clothing.

Now I covered two dozen wooden hangers with padding and scraps of silk, dusting sachet powder inside the covers.

A long towel-rack such as we use in the bathroom, was screwed to the rear wall about 12 inches above the floor. By slipping the toes of shoes through this rack, we keep them in good order out of the way.

Finally, I made a pretty denim bag, with several pockets, which was hung inside the door, for odds and ends. Now the closet not only presents a different appearance, but is always in order and so much more convenient. — Mrs. E. O. Williams, Fresno.

The Truth About Vitamines

FOOD faddists are preaching their sermons at every turn of the road, while their articles appear in nearly every magazine. Those who live in the country should have less to fear than their fellows in the city in regard to malnutrition. However, sound and rational advice is given in "The Journal of the American Medical Association," for July 8, 1922, concerning diet.

"Children should eat a variety of food, and special dangers may follow the habitual use of a very restricted diet.

"Milk is the one indispensable food for children. The diet during the entire growth period should include, if possible, whole milk, or if skimmed milk is used it should be supplemented by butter. Of the butter substitutes, those which contain beef fat, mutton fat and peanut oil are better than those in which other vegetable oils or lard are important constituents." Other extracts from the article follow:

A diet which includes no milk whatever should contain ample amounts of the green or leafy vegetables.

Cereals, particularly those from the whole grains, and potato are important and adequate sources of the vitamin "B."

Fruits have other uses than as laxatives and as sources of mineral salts; they should form a regular part of the diet. When fresh fruits are not available, dried fruits may be given.

Cabbage is such a rich source of all the vitamins that it should form a larger part of the diet than is usually the case, especially since it is cheap, and in winter often almost the only green vegetable available.

In normal peace conditions, the results of vitamin deficiency are most often seen in infancy. In rare cases they may be seen in older children and in adults when there is extreme poverty, and still less frequently in those suffering from chronic disease, or in very delicate children whose diet for a long period has been very greatly restricted.

If the daily diet contains in reasonable amount unskimmed milk, cereals, potato, green vegetables and fruit, one need not fear vitamin deficiency. While these articles are especially rich in vitamins, nearly all of our common foods contain them.

It might be added that cooking at a very high temperature, such as is possible with a steam cooker, or for a very long time, kills the vitamins. Vegetables should not be cooked longer than is necessary for them to become tender.

My Desert Land

MY DESERT Land! My Desert Land!
O charms thou ever hast for me!
Thy broad expanse of acres wild,
Thy grease-wood and thy yucca tree,
Thy wondrous sunsets—ever new
Thy starry nights so clear o'er-head,
Thy pine-clad hills across the plain,
Thy flowers wild—a carpet spread—

ARE dear to me! Are dear to me!
Thy only need, thy greatest dearth
That has held thee chained so long
And ranked thee low upon the earth,
Is not a lack of beauties rare,
Nor yet a fear of winds or clime,
But water for thy fertile soil
Yes, water that shall come in time.

WHERE are the homes? Where are the homes?
The lives that happy here might dwell?
They each must wait the water's flow
From distant river, lake or well.
Where here and there the hand of man
Hath turned with hope the virgin soil—
Poured water on the thirsty earth,
Rich fields of green reward his toil.

AH, YES! Whenever water runs—
As yonder laden orchard shows—
These desert lands, so barren here,
"Rejoice and blossom as the rose."

—Lydia Harvey Michener.

To remove paint from glass, take three parts caustic potash and one part unslaked lime, slake the lime with a little water, and then add the potash and just enough water to make a paste. Put on with a stick, being careful not to get it on hands or clothing, and let remain for a few hours, when the paint can be wiped off. This will also remove dried tar.

Pressure Cooking

HOW long and at how many pounds pressure should the various meats be cooked in the pressure cooker? In general, a large, thick piece of meat which is rather tough should be cooked about fifteen minutes to the pound of meat at a pressure of from 15 to 20 pounds. One of the more tender cuts of meat would require only 10 minutes' cooking to the pound at the same pressure. When meat is cut into small pieces, as for stew, it does not make any difference in the time of cooking whether the amount of meat is two pounds or seven pounds. At a pressure of 15 to 20 pounds it will take from 30 to 50 minutes to cook it, a great deal depending upon the toughness of the meat. Overcooking makes meat tasteless. It should be avoided when meat is prepared in the pressure cooker.

Raisin Cup Cakes

1-3 cup butter or shortening
1 cup sugar
2 eggs
1½ cups flour
¼ teaspoon salt
2 teaspoons baking powder
½ teaspoon nutmeg
¼ cup milk
¾ cup Sun-Maid raisins

Cream butter and add sugar slowly, creaming them together. Add beaten eggs. Mix well. Sift flour, baking powder, salt and nutmeg together. Add to butter mixture alternately with the milk. Add plumped raisins. Put into greased muffin pan. Bake in moderate oven 20 to 30 minutes. This recipe will make about 24 small cakes.

Raisin Bread

1½ cups flour
2½ teaspoons baking powder
¾ teaspoon salt
⅓ cup sugar
½ cup molasses
½ teaspoon soda
2 cups graham flour
1 cup Sun-Maid raisins (seeded)
1½ cups milk

Sift flour, baking powder, salt, sugar and soda, together. Add graham flour and raisins and mix well. Stir in milk and molasses. Pour into greased bread pans and bake in moderate oven 1 hour. If sour milk is used add ¾ teaspoon soda instead of ½ teaspoon. This makes 2 small loaves or 1 large loaf.

[Note—These recipes have been tested by experts of the Sun-Maid raisin growers.—I. S.]

Little Helps

To prevent rusting of a wash boiler, rub it over with whiting after using.

Wooden spoons, used when cooking, will not scratch the bottom of the utensils.

Soiled tatting may be washed more easily if wet and soaped, then placed on some hard surface and scrubbed with a hand brush. This will not injure the tatting and it will be thoroughly clean.

Sometimes a splinter gets under the nail so solidly it is a task to remove it. Place a cold water bandage around the top of the finger, keep it wet and cold, and in a short time the splinter will loosen and the danger of fetsering is minimized.

LIKES THE PATTERNS

Thank you kindly for the catalog and patterns. They are a real treasure—perfectly satisfactory in every way.—Mrs. Hugh S. MacLean, Rialto, Calif.

Note—Compare these patterns, as to price and style, with those obtainable elsewhere!

PRETTY COSTUMES
Chosen by Isabel Sinclair

These costumes are simple and can be made readily by the home dressmaker from the instructions provided. Send 15 cents in silver or stamps for each pattern desired. Address Pattern Department, Orchard and Farm, 1111 South Broadway, Los Angeles. Give full name and address.

4085—Girl's Dress

Cut in 4 sizes: 8, 10, 12 and 14 years. A 10-year size requires 4¼ yards of 32-inch material. Price 15 cents.

4080—Miss's Dress

Cut in 3 sizes: 16, 18 and 20 years. An 18-year size requires 6⅝ yards of 32-inch material. The width of the skirt at the foot is about 2¼ yards. Price 15 cents.

4097—Lady's Dress

Cut in 6 sizes: 36, 38, 40, 42, 44 and 46 inches bust measure. A medium size requires 5¼ yards of 32-inch material. To make underbody, sleeve facings, and vest portions of plain material as illustrated, 1¼ yards 40 inches wide will be required. The width of the skirt at the foot is 2⅝ yards. Price 15 cents.

3312-2939—An "Up-to-Date" Frock

Waist 3312 cut in 7 sizes: 34, 36, 38, 40, 42, 44 and 46 inches bust measure. Overdress 2939 cut in 7 sizes: 34, 36, 38, 40, 42, 44 and 46 inch bust measure. To make the waist will require 2½ yards of 36-inch material. The overdress requires 3½ yards of 40-inch material. Two separate patterns, 15 cents each pattern.

4088—Girl's Dress

Cut in 4 sizes: 6, 8, 10 and 12 years. A 10 year size requires 2⅛ yards for the waist and 2¼ yards for the dress of 32-inch material. Price 15 cents.

3705—Lady's House Dress

Cut in 7 sizes: 36, 38, 40, 42, 44, 46 and 48 inches bust measure. A 38-inch size will require 6¾ yards of 27-inch material. The width at the foot is 2¼ yards. Price 15 cents.

Sleeveless "Cover All" Apron

Cut in 4 sizes: Small, 34-36; medium, 38-40; large, 41-44; extra large, 46-48 inches bust measure. A medium size requires 4½ yards of 36-inch material. Price 15 cents.

3885—Child's Romper Suit

Cut in 4 sizes: 2, 4, 6 and 8 years. A 4-year size requires 2⅞ yards of 32-inch material. Price 15 cents.

4091—Girl's Dress

Cut in 4 sizes: 2, 4, 6 and 8 years. A 2 year size requires 1½ yards of 32-inch material. Price 15 cents.

CATALOG NOTICE

Send 15 cents in silver or stamps for our up-to-date fall and winter, 1922-23 catalog, containing over 500 designs of ladies', misses' and children's patterns, a concise and comprehensive article on dressmaking; also "Some Points for the Needle, illustrating 30 of the various simple stitches. All valuable hints to the home dressmaker.

Use Coupons in Ordering Patterns

Herewith find ..... cents, for which send me the following patterns:

Pattern No. ..... Size.....

Pattern No. ..... Size.....

Pattern No. ..... Size.....

(Be sure to give number and size. Send orders for patterns to ORCHARD and FARM, 1111 South Broadway, Los Angeles. Be sure to sign your name and address below.)

Name .....

Address .....

.....

.....

(Write numbers of additional patterns below.)

What Farm Boys Want in Food

There are several ways to keep boys satisfied to stay on the farm. One way is to give them flavory, energizing food.

The automobile, moving pictures, the telephone, and now the radio—all make farm life more enjoyable to the boy.

Add the foods he likes each day and you've made the attraction just about complete.

But that food must be more than merely tasty. It must be energizing, too. For those who work hard must have the sapped energy replaced.

Rare Food Value in This Pie

No other dessert equals a luscious raisin pie made with big, plump, tender Sun-Maid Seeded Raisins.

Raisins furnish 1560 calories of energizing nutriment per pound—more of this kind of nourishment than eggs, meat or fish.

Raisin Pie

Two cups Sun-Maid Seeded Raisins, 1½ cups boiling water, ½ cup sugar, 2 tablespoonfuls corn starch, 2 tablespoonfuls lemon juice, 1 tablespoonful grated lemon rind, juice of 1 orange, 1 tablespoonful grated orange rind, 1 cup chopped walnuts.

Cook raisins in boiling water for 5 minutes, pour into it sugar and corn starch which have been mixed. Cook until thick, remove from fire and add other ingredients. Bake between two crusts. Walnuts may be omitted if desired.

All measurements for this recipe are level.

Blue Package (seeded) best for pie and bread.

That's due to fruit sugar in the raisin. This sugar is practically predigested by the sun, so it revives a tired man almost immediately after eating.

Raisins furnish food-iron also—fine food for the blood. So these delicious Seeded Raisins are both good and good *for* you.

Try the recipe for raisin pie printed on this page. Make it with your own delicious pie crust. The juice of the raisins forms a luscious sauce. You've never tasted better pie, nor has that boy of yours.

He wants delicious food like this that *energizes*.

Let him try it. See what he has to say. Add this touch to the other home attractions.

Sun-Maid *Seeded* Raisins

Get delicious Sun-Maid Seeded Raisins. Big, plump, tender, juicy raisins. Made from finest California table grapes. Full of flavor, energy and iron.

Mail coupon for valuable free book of recipes.

Sun-Maid Raisin Growers
Membership 13,000
Dept. B-710, Fresno, California

CUT THIS OUT AND SEND IT

SUN-MAID RAISIN GROWERS,
Dept. B-710, Fresno, Calif.
Please send me copy of your free book, "Recipes with Raisins."

Name .....

Street .....

City ..... State.....

THE FARMERS' CLASSIFIED MARKET PLACE

LAND FOR SALE

WHY NOT BEGIN RIGHT?

FIRST
Decide on the branch of agriculture you wish to pursue, THEN

WRITE TO HEADQUARTERS.

We will advise you as to the best locality for your particular requirements.
LET US DO THE WORK AND GET YOU EXACTLY WHAT YOU WANT.
Due to climatic and soil conditions, certain sections excel in the production of certain products.

WHY NOT GET THE BEST?

We have over 60 associated representatives throughout the State, who have listed only the choicest properties in their localities. Be it an acre or fifty thousand, if we do not already have it listed we will find it for you at once. Possibly this extensive FREE service may be of considerable value to you.

W. A. HEITMAN CO.,
W. P. RICE (Land Dept.),
Entire ninth Floor, T. Merritt Bldg.,
Los Angeles, Calif.

SUTTER BASIN LANDS.
In the heart of the Sacramento Valley, rich, deep "river bottom" soil, with a complete irrigation system, is offered to good farmers. Any crop you may want to grow will find a good home here. Most liberal terms.
SUTTER BASIN COMPANY,
304 California Fruit Bldg.,
Sacramento, California.

FOR SALE: 40 acres or more of first-class grape and alfalfa land. 4 acres improved in bearing orchard and vineyard. $40 an acre. For information write owner, A. Oberlin, 1036 Wall St., Los Angeles, Cal.

OREGON—Write for list of bargains in stock, grain, fruit and poultry ranches in the Grand Willamette Valley. Henry Ambler, Realtor, Philomath, Benton County, Oregon.

FOR SALE OR EXCHANGE—$9000 cash equity in 160 acres irrigated improved Imperial Valley land. Address, W. Linkletter, Calipatria, Calif.

FARMS FOR SALE

FOR SALE—8½ acres. 1 mile north of Los Molinos, California. 100 feet from State highway, improved with house, barn and chicken houses. 2 acres bearing peach trees, balance in crop. Well for domestic purpose. Perpetual water right for irrigation. Fenced. Household goods included. Reason for selling, old age and partial blindness. Price $2200, $1200 cash, balance time. Joseph L. Kuhle, 3601 Telegraph Avenue, Oakland, Calif.

PARADISE, THE ORCHARD HOME PLACE. Water, electricity, telephone, good roads, healthful climate, reasonable prices. Box O, Publicity Committee, Paradise, Calif.

FARMS WANTED

CASH buyers for California Ranches. Also San Francisco property to exchange for country. Send full details to Ring, 830 Market St., San Francisco.

WANT TO hear from owner having farm for sale. Give particulars and lowest price. John J. Black, 110th St., Chippewa Falls, Wisconsin.

I WANT WESTERN FARMS for cash buyers. Will deal with owners only. R. A. McNown, 367 Wilkinson Bldg., Omaha, Neb.

WANTED—To hear from owner of good ranch for sale. State cash price, full particulars. D. F. Bush, Minneapolis, Minn.

RANCHES FOR EXCHANGE

FOR EXCHANGE—31 acres improved ranch in Sacramento Valley. New 4-room house, large barn. Some peach orchard. ¼ mile to school and post office. Nine miles to railroad by good auto road. Price $6000. $1500 mortgage with two years to run. Will exchange for clear city property in Portland, Ore., San Francisco or vicinity, or Los Angeles. Address owner, C. W. Snidow, 5391 No. Huntington Dr., Los Angeles, Cal.

FOR SALE OR TRADE—50 acre improved farm in almond districts, 5 miles from Paso Robles. Sacrifice price for cash or trade my $4000 equity for clear property. Also equity in business building for sale. Bargains for immediate deals. Agents write for listings. Box 247, Paso Robles, Calif.

FARMS—FOR SALE OR RENT

FOR SALE OR RENT—80 acres improved dairy ranch. Alfalfa, hog tight fences, 40 cows at $75 a head; teams, tools, etc. Investigate this. W. E. Bissett, Arlington, Ariz.

AUTOS AND AUTO SUPPLIES

AUTOMOBILE Mechanics, Owners, Garagemen, Repairmen, send for free copy America's Popular Motor Magazine. Contains helpful, instructive information on overhauling, ignition, wiring, carburetors, batteries, etc. Automobile Digest, 506 Butler Bldg., Cincinnati, Ohio.

AGENTS WANTED

FOLLOW THE DOLLARS—$50 to $100 per week, the money yours; something new, not an old wornout proposition; field untouched; experience unnecessary; takes everybody by storm; mony rolls in; show 50, sell 40; demonstrated in one minute; sells on demonstration; the new Inkless Fountain Pen, the twentieth century wonder; never leaks or spills; with this pen no more use for the ink bottle; sample pen 50c; this proposition is 18 karat; money back if not as represented, agent's profit 200 per cent; exclusive territory. Send for agency today. Inkless Fountain Pen Co., 1522 Eighth St., Des Moines, Ia.

WANTED—SALESMEN WHO CAN SELL high grade, dependable nursery stock. Exclusive territory; outfit furnished and cash advanced weekly. Commission basis. Address Albany Nurseries, Inc., Albany, Oregon.

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San Francisco Stock Show

AN exceptionally notable list of prize-winning livestock will be exhibited at the second annual Livestock and Horse Show of he California National Livestock Show at Twelfth and Market streets, San Francisco, October 14 to 22. General Manager John A. Bunting announces that the list of Shorthorns and Herefords will exceed that of the recent Sacramento State Fair, and that the entries of sheep will be greater in number and quality than ever exhibited at any California livestock show.

On the success of the present show depends he establishment in San Francisco of headquarters for a permanent annual livestock show, and for that reason the breeders of the West have devoted themselves whole-heartedly to make the coming show a signal success.

Among the notable individual entries are the following:

Grand champion Hereford, "Bocaldo Beauty," entered by Romie C. Jacks of Monterey.

Champion Aberdeen-Angus at Chicago International last year, "Jock 5th," entered by University of California stock farm at Davis.

Grand champion Jersey cow, "Salome of Mossdale," entered by J. E. Thorpe of Lockeford.

The Shorthorn entries from the Pacheco Cattle Company include "Pacheco Marshall" and "Silver Beauty," consistent winners in their class.

Grand champion Hereford steer, "Mission Jim," entered by Mission San Jose rancho.

Grand champion dairy Shorthorn cow, "Lovely Perfection," and grand champion dairy Shorthorn, "Count Tickford," both entered by Santa Rosa Stock Farm. The latter entry will be exhibited at the coming Chicago International.

Grand champion Jersey bull, "Financial Corrector," entered by the Waterloo herd of Lockeford.

First prize bull, "Real Patrician," entered by H. H. Gable of Esparto.

Grand champion Hereford bull, "Lincoln-Domino," entered by William Briggs of Dixon.

Junior champion Hereford, "Lady Domino," entered by H. A. Baldwin, Pleasanton.

From the nationally noted Caledonia Farms, a Shorthorn herd including the grand champion bull, "Caledonia King 2nd," and the grand champion female, "Caledonia Mischief 2nd," will be shown. The Caledonia herd is said to be the greatest herd under any single ownership in this country today.

From Littleton, Colorado, is entered the junior champion Hereford, "Repeater 66," winner at the Great American Royal Livestock Show at Kansas City, and entered by J. D. Canary.

Grand champion female Hereford "Lady Fairfax 20th," entered by C. S. Howard.

Among the entries is a herd of calves sired by "King Segis Alcartra Prilly, 192705," the latter having been grand champion at the stock show here last year and having been sold to Pabst, the brewer and famous stock fancier of Milwaukee, for the greatest price ever paid for a bull in California either at public or private sale, and said to have been in the neighborhood of $100,000.

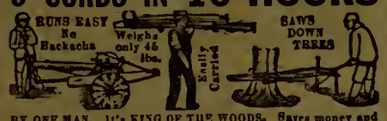
Congdon & Battles of Yakima, Washington, have entered their herd of Aberdeen-Angus, one of the greatest Aberdeen Angus herds in the world; and from Escalon, A. B. Humphrey has entered a herd of Guernseys, including a grand champion bull and a grand champion cow.

A new exhibitor is A. H. Barnum of Moro, Oregon, with Herefords, who may furnish some surprises to the old exhibitors.

The sheep entries will comprise the largest showing ever made at a livstock exposition in California, among the notable herds being 60 head from the Corriedale Sheep Company of Hollister; Southdowns from the ranch of Hubbard & sons, Oregon; Rambouillets from Bullard Brothers of Woodland, and Hampshires from the Straloch Farms, all these exhibitors showing champions and prize winners among their exhibits.

The estate of Thomas Dibbiee has a showing of Clydesdale horses; Ratto Stock Farm, of Belgian horses, and Romie C. Jacks, of Percherons, as well as blooded entries for the horse show.

9 CORDS IN 10 HOURS



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Should pay $600 an acre during the first six years after planting. Under our plan of sale this entire amount will be received by the purchaser. A mature fig orchard at Planada, planted 76 trees to the acre, should pay, according to Mr. N. E. Beckwith, the largest grower and canner of Kadota Figs, from $600 to $1200 an acre per annum when the grower receives 5 cents a pound on the trees. Growers are now—1922—actually receiving 10 cents a pound in the orchard.

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SAN FRANCISCO, CALIFORNIA
OCTOBER 14-22
TWELFTH AND MARKET STREETS

The combined shows this year at San Francisco will greatly exceed in entries and quality the successful shows of last year.

Special railroad rates from all California points.

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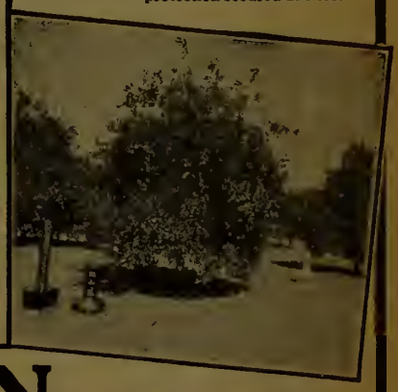
Progressive farmers, breeders, orchardists insure their lives, their buildings, their automobile, etc. They do so because it is good business. It is even more important and more necessary that orchardists insure their fruit crop against frost and freezes—because when killing frosts come—the loss is appalling. Orchardists should protect themselves against these lost profits. These losses can be eliminated. The DUNN Orchard Heater **completely** solves the problem.

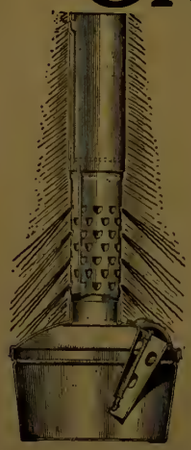
650 thousand DUNN Orchard Heaters in use by largest citrus growers in California. Hundreds of thousands of this type heater in use elsewhere in U. S. Most effective because of exclusive patented features. Improved lower stack with perforations depressed to **inside**, radiates heat to side **and down**—with more intense heat at bottom of stack. Perfect combustion. All heat—and no smoke. Joints fit **tightly**. Only draft is through patented **down draft tube**. No other draft anywhere. Heat generated rapidly—maximum protection secured at once.

The DUNN
With Improved Lower Stack, Umbrella Cover and Removable Top Cover.



Demonstration of DUNN Orchard Heaters on Ranch in Southern California.

The DUNN Orchard Heater



Shows how the DUNN radiates heat to the side and to the ground—with more intense heat waves coming from bottom of the improved stack with perforations depressed to inside.

is the only orchard heater with **permanent asbestos** lighting wick. Lights quickly and stays lit. The DUNN Orchard Heater burns clean as a gas jet. Uses less oil.

9½ gallon heater burns 20 hours at full 100% efficiency without refilling. Collapsible stacks. Patented swedge on bowl is fine hand grip for carrying heater. Made of 24 gauge extra heavy Keystone Copper Bearing Steel. Seamless bowl and cover.

Orchard Heaters Needed Everywhere

Citrus growers in California, Florida and adjacent states should obtain facts about records and performance of the DUNN Orchard Heater in citrus groves.

Orchardists in Texas, Mississippi, Alabama, Georgia, Carolinas, Tennessee, Arkansas, should also make inquiry as to the DUNN Orchard Heater and how it protects profits.

Growers in the east—New York, Pennsylvania, Ohio and adjoining states, need the orchard insurance made possible by use of the DUNN Orchard Heater.

Indiana, Illinois, Missouri, Iowa, Wisconsin, Michigan—you are not immune from profit-destroying frosts. Ask us for the facts. Do away with the loss caused by freezes.

The Northwest too—Washington, Idaho, Oregon—investigate the DUNN Orchard Heater.

Records—everywhere—show DUNN Orchard Heaters do pay hundreds of dollars on the investment. The first cost—except for fuel—is the only cost. Depreciation based on actual facts less than 2% for 8 years.

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I want every sufferer from any form of muscular and sub-acute (swelling at the joints) rheumatism to try the great value of my improved "Home Treatment" for its remarkable healing power. Don't send a cent; simply mail your name and address, and I will send it free to try. After you have used it, and it has proven itself to be that long-looked for means of getting rid of such forms of rheumatism, you may send the price of it, One Dollar, but understand I do not want your money unless you are perfectly satisfied to send it. Isn't that fair? Why suffer any longer, when relief is thus offered you free. Don't delay. Write today.

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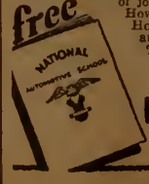

NATIONAL Automotive School
Los Angeles, Cal.
899 So. Figueroa St.

YOUR GARDEN of FLOWERS

by Helen Temple

A Garden of Perennials

THE botanical definition of perennial is: "A plant which grows two or more years without renewal."

A busy gardener's definition is: "A plant that doesn't demand as much attention as an annual every year." And even though we can't get along without our annuals for quick results and to fill in the empty spaces, a perennial garden has become very popular within the last five years, owing to the many demands upon our time. A well-established perennial garden will need little attention, aside from the usual irrigation, cultivation and trimming, for three or four years, in our semi-tropical coastal and mild interior sections. In the frost districts, where the frosts are very severe and lasting, mulching and potting must be added to this list of duties.

HELEN TEMPLE

Many of our perennials will bloom the first year from seed if they are sown early. I have often heard novices say: "I won't plant perennials. Too much time elapses before they bloom." But at least for permanent beds and borders, we should by all means sow perennials.

PERENNIAL FLOWERS THAT BLOOM THE FIRST YEAR

A few of our hardy flowering perennials that will bloom the first year are the Corn Flower Aster, Tritoma hybrids or Flame flowers, Baby's Breath, Forget-me-not, Gaillardia grandiflora, Hibiscus hybrids, Maltese Cross, Blue and White Bell Flowers, Garden Pinks, Achillea, Alyssum (Gold Dust) Asters (Michaelmas Daisies), Canterbury Bells, Coreopsis, Iceland Poppy, and the single and double Larkspur.

This list provides a large assortment of perennials for quick effects and also covers a wide range of colors. Borders of Gold Dust and Iceland Poppies will provide bright "trimmings." The Iceland Poppies bloom from early June until winter, and the Gold Dust blooms in May; thus we have a flowering border for more than half the year and during the remainder of the time the plants are not unattractive.

For genuinely striking effects in the flowering perennials that bloom the first year, we should plant a background border of the new Tritoma or Flame Flower. They grow to a height of four or five feet and their blooms are often a foot long, being a bright orange-scarlet.

Then we have the Hibiscus hybrids for bright, showy flowers. These shrubs grow to a height of three to six feet, being very useful as single specimens or in groups. They may be had in bright red, salmon and white, all with dark red centers. Another quick-blooming perennial is the Maltese Cross. This also is a showy flower, a bright scarlet, blooming from early summer to fall.

Another addition to the "brightening effects" is the perennial Aster in the more brilliant colorings. We have also perennial asters of the delicate colors and soft blendings from white to pink, white to lavender, and white to blue. The aster is one of the best all-'round flowers on the market, being grown in so many varieties that one may choose the types and colors to suit one's need.

A Blue-and-White Perennial Garden

THE blue and white beds are attractive because we have so few of them. It seems that we always have pinks and reds and lavenders and yellows in abundance, but a pure blue-and-white flower bed is almost rare. Among the first-year perennials in the white, we have the hardy Achillea, which grows about 18 inches high and blooms all summer. These make a splendid border for a bed of blue Larkspur of the single and double varieties. The Larkspur singles grow about three feet high and are very dark, while the double hybrids grow nearly five feet and may be had in a variety of blues. All three of these perennials flower all summer.

CANTERBURY BELLS

The Blue and White Canterbury Bells will bloom the first year if they are sown early. There are several varieties of Canterbury Bells, some of them growing more than three feet in height, while other varieties grow only six inches. The medium Canterbury Bells seldom fail to bloom the first year.

A bed of Canterbury Bells of the various heights may be planned quite easily. The Pyramidalis, or tall Bell, makes an excellent background for the blue and white beds, which are planted near a fence or building. Then follow them with rows of blue and white Bells of the various sizes until the border of six-inch Carpaticas is reached.

For our blue and white garden, we must not forget the forget-me-nots, which are perennials that bloom the first year. If the frosts kill them in the cold interior, they usually come up again in the early spring from seed. The Forget-me-not is grown most successfully in a cool, shady situation. It does best in a rich soil that does not sour easily. We have a variety of blues, and the white forget-me-not. Some of the improved varieties are much larger of flower than the old-fashioned types. In the blues, there is a pale, a very bright, and an indigo blue, aside from two or three varieties with the yellow eye, which would spoil our strictly blue and white beds. The usual height of the forget-me-not is six inches, although many of the newer varieties attain a height of more than nine inches.

A bed of Forget-me-nots and one of violets should be planted along the shady side of the walk, or in an angle of the house where the sun does not shine too long at a time. The Victoria and the Semperflorens Forget-me-nots always bloom the first year from seed. The other varieties usually bloom the first year if they are started very early in order that they may be transplanted during the first warm spring days.

Then we must not forget our asters from seed for the first-year perennial garden of blue and white. We have some very good specimens of the blue and white Aster that should be tucked into this garden.

I have named perennials that enjoy the reputation of blooming the first year from seed. So often gardeners hesitate to sow perennial seed, yet feel that plants are too expensive for the first-year effects, and therefore sow nothing but annuals. The annuals are beautiful, but so often we haven't the time to give them.

HARDY PERENNIALS THAT BLOOM THE SECOND YEAR FROM SEED

Hardy perennials that bloom the second year after sowing are the Shasta Daisies, Monkshood, Anchusa Italica, Candytuft, Columbine, Sweet William, Foxglove, Hollyhock, Incarvillea delavyi, Lobelia cardinalis, Lupinus polyphyllus, Oriental Poppies, Persian Daisies (single and double),

Caucasica Scabiosa, and the Yucca or Adam's Needle.

The Monkshood, or Aconitum, are excellent border flowers, growing from a foot or two feet in height. They are a porcelain blue and are considered very desirable for decorative purposes and cutting, being in full bloom during August and September, when many of our gardens are just beginning their second blooming season.

We all know how popular the Shasta Daisies have become in California. There is scarcely a yard without a row of them somewhere. I have known them to bloom almost the year around when they were well watered and cared for, though they should bloom only during the summer. However, this "feat" occurred in our well-known Southern California in a section where the climate varies but a very few degrees summer or winter.

A GOOD BORDER PLANT

The Anchusa is another very hardy, bright-blue border plant. It grows about five feet in height and blooms all summer, thus making a very good border near a row of shrubs or against a low fence. Then we have the beautiful double Hollyhocks, which may be had in pink, scarlet, rose, yellow, and white. These average a growth of six feet, making one of our most effective plants in the garden. They bloom from midsummer until October.

The Lupinus grows about three feet in height. It is very good for beds, but I do not think they are pleasing in a border. This flowers all summer. The Foxglove, like the Lupinus, may be had in a variety of colors. This is a very good flowering perennial to plant against the house.

The Sweet William is one of the sturdiest of our flowering perennials. If you are adding these popular plants to your perennial garden, choose a few of the newer varieties. The Persian Daisies also are very effective. They are very bright in coloring and bloom from early in June until the frost nips them. Both the doubles and singles are very good. Should be cut back after blooming, for best results the next year.

The Lobelia cardinalis will bloom the first year if started early in a hotbed. These, like the Oriental Poppies, are a very bright scarlet.

Garden Work for October

IN Southern California, where the frosts are not heavy, sow pansies, forget-me-nots, cineraria, stocks, sweet peas, larkspur, coreopsis and centaurea. The perennials among these sowings will bloom the next year even if they should be the so-called second-year bloomers.

In the interior, do not sow the cineraria at this time, unless you are using a hotbed. The hardy plants, too, will need the protection of glass as soon as the cold weather sets in. I often see a straggly "tender" plant growing out in the yard of our Southern Californians and wonder why they do not plant them indoors, or at least in a protected angle of the house.

Even in semi-tropical sections, we should use caution in handling tender plants. I never advise planting them out-of-doors unless they are amply protected. The straggly "tender" plants that grow in the wind-swept yards are not beautiful. They may survive the elements, but they are not plants to be proud of. October is a very good month to pot these for the house or to plant them in the greenhouse.

Seeds should be gathered in October. One of the easiest ways to keep the best seeds from the largest blooms is by the use of small cheesecloth bags. Slip the bag over the bloom after it begins to lose its glow and tie it securely. When the bloom is "crackly dry," you may feel sure the seed have ripened.

The summer flowering bulbs that have died down should be stored this month. The bulbs that should go into the ground this month for early blooms next season are the Tulips, Anemones, Narcissus, Easter Lilies, Freesias, Callas, Iris, Hyacinths and Ranunculus

Questions and Answers

WHAT shall I do with my rubber plant? It seems to need repotting. Also, what shall I do with my Cyclamen? One person has told me to keep it dry after blooming, and another has said to keep it wet. I have lost the bulbs both ways.—Mrs. G. A. E., Santa Paula.

(1) Repot your rubber plant, using equal parts of sod, old cow manure and sand. Keep it moist but not wet during the winter. Plant it out for a few months every year for your best specimens. To make it bushy, cut back the top when it is 15 or 18 inches high. In the summer, water often and well.

(2) Cyclamen puzzle many growers. The best results with them are obtained when they are removed from the pots in which they are grown, after they have finished blooming. Store them in clean sand in a dark, cool place where they will not dry out.

My rose bush produces nothing but roses with rotted centers, and the leaves are scabby. What shall I do with it? It is an old bush.—Miss A. S. D., Hanford.

I advise removing the bush and burning it. Then spade up the soil in which it grew, adding a liberal quantity of well-rotted manure and a little slaked lime; then in a few weeks set out a healthy rose recommended by a florist in your locality.

The Southern California Fair

THE amazingly rapid and extensive growth of our agricultural and industrial resources will be vividly depicted at the Southern California Fair at Riverside, October 10-15. According to Secretary W. W. Van Pelt, it will exceed in size and quality of exhibits all previous efforts.

The fair will be representative of the entire Southland, and among the counties co-operating are Los Angeles, San Bernardino, Orange, Imperial, Tulare, Fresno, Kings, and probably Santa Barbara and Ventura. Practically all the communities in Riverside County have reserved space for their displays in the huge agricultural tent which will measure 130 by 400 feet. To inform the public about the [illegible] project on by the Government in the interest of general forestry and land development, there will be a big demonstration exhibit, illustrating activities in six divisions of the United States Department of Agriculture. This exhibit will cover 2000 square feet of space.

Riverside will have the greatest dairy, swine and goat shows seen on the Coast this year. The finest herds of dairy stock in the State have been entered, including full lists of Holsteins, Guernseys, Jerseys, Ayrshires, Dutch Belted, and the first Brown Swiss dairy cows on view. In the Junior Fair, one of the chief features will be the dairy demonstration and exhibit tent, portraying better dairying methods and showing a large display of improved appliances and equipment, as well as dairy by-products.—E. M. G.

Keep California Free

from Political Control of Industry

We represent many owners of real property in California. The tax burden on real property, which falls ultimately on tenants as well, and the tax burden on public utilities, which falls ultimately on rate payers, have become oppressive.

The great bulk of our California taxes are laid upon us by popular votes and not by the local and state legislative authorities. The people are too prone to vote for bonds and other expenses without calculating the cost to themselves in taxes. When they get the tax bill, they groan and wonder who saddled them with such burdens.

from Enormous Debt

State Controller Ray L. Riley in his 1921 report, recently published, says:

"During the past decade the total bonded indebtedness *for all forms of government* in California has increased from $93,906,423 to $321,616,238.66, or 242 per cent, while the wealth of the State has increased about 60 per cent. This tremendous increase that aggregates more than 3 per cent of the total wealth of the State should have the attention of all tax-levying bodies. California's credit must not be jeopardized by over-financing and the same ratio of increase during the next ten years would impose confiscating tax burdens upon the people."

"During the past year the total amount expended for interest and redemption of debt was $27,599,297. To produce this amount it would require a tax rate of 56 cents on every $100 of assessed valuation."

from Destructive Taxes

In face of that warning, a proposed constitutional amendment has been put on your ballot to be voted on November 7th which creates a powerful new commission, called the Water and Power Board, and authorizes it, *without further reference to the people or the legislature*, to issue state bonds to the enormous amount of half a billion dollars. That bond issue will multiply the *state's* debt more than *six* times. The board is authorized to invest the money in water and power speculations and "to do *any* and *all* things *necessary* or *convenient* for the conservation, development, storage and distribution of water, and the generation, transmission and distribution of electric energy." It is authorized also "to purchase, acquire, produce, manufacture or otherwise provide facilities, materials and supplies, raw or finished, *and any property or thing necessary or convenient* to the accomplishment of the purposes of this article."

The board is authorized *to fix its own* rates, which need not be uniform, so that particular *localities* or *industries* could be favored. The proposed amendment makes an appointive board, sitting at Sacramento, the arbitrary masters of the credit and the industry of the State of California. The amendment even authorizes the board to appoint and fix the compensation of such employes as it may require and *exempts the board from the state civil service.*

This is bureaucracy in its completest form. We have had sufficient experience with government by bureaus to know that we don't want any more. California, prosperous as it is, cannot stand the proposed addition to the state debt and the proposed arbitrary control of industry by a board of politicians. Give a political board unrestricted authority to hire employes and fix their compensation, and give them 500 million dollars of taxpayers' money to play with, and in a year you will see *the biggest political machine* and the *biggest tax bills* that any state has ever had.

Vote NO on number 19 on your ballot November 7th

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To prove just what this remarkable treatment can do for you, we will send our appliance on trial with the understanding that we will not charge you a cent if it fails to give satisfactory results. This offer is open to any person who has pain of any kind, nerve weakness, high blood pressure, stomach, kidney or liver complaint, bladder trouble, or disease of the lungs or heart.

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Plant now for February's high-priced market. Should return up to $1000 per acre first year. The California Rhubarb Association could have used the output of 1000 acres this season.

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Sunflowers

BUT FATHER WASN'T USING SLANG!

My father pointed to the rug,
And said, "Now beat it, Kid"—
Then used the carpet stick on me,
Just because I did.

—Justin Nutt

Uncle Wiseacre says he knows some men who will never get on until somebody tells them where to get off.

A Distant Cousin

"So you are related to our host?" politely inquired the guest at the fashionable reception.

"Yes," acknowledged the shabby looking stranger, "I'm his cousin, one million dollars removed."

Long and Short

The Detective—Give me a description of your missing cashier. How tall was he?

The Boss—I don't know how tall he is. What worries me is that he was $3000 short.—Puck.

2½-H.P. SAW $77.50

Try 30 Days. Cuts fast; easy to operate. Steel saw-back with split bear. Lines 2½ and 3½ H P Saws ready to mount on skids or on wagon bed. Magneto built in at small additional cost. Shipped direct from factory or 9 branch houses. FREE BOOK—write today.

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Prepared for Eventualities

A colored man, asked to sign certain papers, began writing with his right hand, then transferred the pen to the left and completed his signature.

"Well," remarked the notary, "I see you can write with either hand."

"Yassuh, dat's true, boss. I begun by learnin' t' cut mah fingernails wid mah left hand, figgerin' some day I might lose mah right."

Who Can Deny It?

The class has been discussing royalty, its rise and fall. "Now," suggested the teacher, can anybody tell me whether there is any power greater than a king?"

"Yes," shot back Johnny Jump. "An ace."

"I can't find the alarm clock, Maria. Do you know where it is?"

"Perhaps," suggested his wife, sweetly, "it's where you told it to go this morning."

Ready for Business

"Prisoner at the bar," called out the clerk upon the occasion of Patrick O'Shaughnessy's trial, "do you wish to challenge any member of the jury?"

Pat looked the panel over carefully. "Well," he replied with some hesitation, "I ain't exactly in trainin' now, but I reckon I c'd take on that fat guy over in th' corner fer a r-round or two."

H. P. Rigid Rail Tracks on a Fordson

WHEN AND WHERE TO SEE THEM

H. P. Rigid Rail Tracks and H. P. "40" Tractors have an interesting story of accomplishment of which every farmer on the Pacific Coast should listen and profit by doing so.

H. P. Rigid Rail Tracks solve the small tractor problem by giving increased efficiency to the Fordson, while H. P. "40" Tractors embody the same, successful rigid rail track principle in a tractor of larger size.

BOTH WILL BE EXHIBITED IN THE VARIOUS COUNTY FAIRS AS FOLLOWS:

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October 2nd to October 7th

KERN COUNTY FAIR AT BAKERSFIELD
October 2nd to October 7th

VENTURA COUNTY FAIR AT VENTURA
October 3rd to October 8th

RIVERSIDE COUNTY FAIR AT RIVERSIDE
October 10th to October 15th

If you cannot attend any of the County Fairs to seem them, write for literature.

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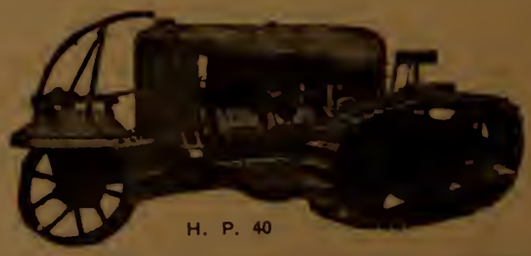

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"I received my first Montgomery Ward pricelist in 1872, and I became a customer almost immediately. The catalogue has been coming regularly ever since, and I have been doing business with Montgomery Ward & Co. practically all of that time

"I wish to state that in all of those years there has never been any occasion to make a complaint or to return any goods we have ordered from Montgomery Ward & Co."

William McCandless, Sloan, Iowa
A Customer Since 1872

For fifty years, ever since Montgomery Ward & Co. was started, Mrs. Merrick has taken a keen interest in its development.

"I have been a customer from the first.

"I have always had the most courteous treatment from you," she said. "I believe that much of your success has been due to your unfailing policy of fair dealing."

Mrs. Emma E. Merrick, Malcolm, Iowa
A Customer Since 1872

Mr. Beatty is a real pioneer. He is the only man now doing business in Helena who came to Montana in 1862. He served under General Johnson in Utah (1857-8). He finally settled in Winston, Montana.

"I have traded with Montgomery Ward & Co. for 45 years," he said, "and I have never found anything wrong that has not been satisfactorily settled. If you continue to deal as fairly with your customers as you have in the past you will surely prosper."

Mr. George Beatty, Winston, Montana
A Customer Since 1877

Millions Buy from this Book on Faith in the Name "Montgomery Ward"

This book is saving many millions of dollars for the American people.

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This book—our Golden Jubilee Catalogue—celebrates our 50th Anniversary by offering you the lowest prices possible on everything for the Home, the Farm and the Family.

It is filled with bargains—with merchandise of high quality. And every price is a Money Saving price for you.

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Today millions of people are buying from this book on faith in the name "Montgomery Ward."

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To buy from this Golden Jubilee Catalogue is to be guaranteed a definite saving and entire satisfaction—and back of this guarantee is the reputation of Fifty Years of fair dealing.

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90 EGGS AND THE HEN IS JUST PAYING HER "KEEP"
120 EGGS AND THE HEN IS JUST PAYING A PROFIT—

but why stop with 30 EGGS

AUTHORITIES estimate it takes 90 eggs a year to cover the "keep" of a commercial hen—and 120 eggs to make just a profit. But—there's the rub! How are you going to get the extra eggs—the eggs that make the big bank-book difference between just a *profit* and a *just* profit?

The average hen under natural range conditions will produce only about 75 eggs a year. Yet *proper feeding and care* have developed commercial flocks that average 120 to 150 eggs a year per hen. Some flocks will range even higher.

It's all a matter of feed and care. The feed must be clean, tasty, varied. The elements of an egg are derived from many sources. Therefore, the greater the variety of feed ingredients the better. SURELAY contains a dozen tested ingredients balanced and blended according to the famous Sperry formula. It is made so good, so uniform, so tasty, that every time Mrs. Hen takes a peck at it she is eating something that goes into the making of an egg.

You know that Nature provides each hen with a certain number of embryonic ova. These are minute yolks which, under ordinary conditions, will take the hen a number of years to produce. But that isn't very profitable. So it is your job as a poultryman to secure the most eggs in the least time—and keep the hen in *good health* all the while.

SURELAY will give every hen in your flock an opportunity to pay not only her board bill but pay *you* a profit. This prime quality feed calls the "egg-making department" to order—makes it produce—and keeps the hen in "fine fettle" all the time.

Ask your dealer for Sperry SURELAY in the yellow-striped bag; and send for "Makes Hens Happy"—a practical guide to more eggs and more money. Simply clip the coupon and mail today.

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